MACMILLAN SOCIAL-STUDIES SERIES

Living Together Around the World

CUTRIGHT · CHARTERS · CLARK

MACMILLAN SOCIAL-STUDIES SERIES

A basal series in history and geography

Senior Authors: PRUDENCE CUTRIGHT • W. W. CHARTERS

Geographical Consultant: ZOE A. THRALLS

Living Together at Home and School
MAE KNIGHT CLARK

Living Together in Town and Country
MAE KNIGHT CLARK

Living Together Now and Long Ago
BERNICE NEWELL

Living Together Around the World
MAE KNIGHT CLARK

Living Together in the Americas
KING • DENNIS • POTTER

Living Together in the Old World
WALTER LEFFERTS

Living Together Around the World

PRUDENCE CUTRIGHT - W. W. CHARTERS -
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ZOE A. THRALLS - Geographical Consultant

THE MACMILLAN COMPANY - NEW YORK

Printed in the United States of America

ACKNOWLEDGMENTS

The authors wish to thank Alfred A. Knopf, Inc., for permission to retell the story on pages 30–41, adapted from *Spice Ho!* by Agnes Danforth Hewes; the J. B. Lippincott Company for permission to quote the poem on page 201, "Ring Around the World," from *All Through the Year* by Annette Wynne; The Macmillan Company for permission to quote the stanza on page 209, "Who Has Seen the Wind?" from the *Poetical Works* of Christina Rossetti, and to retell the story on pages 229–233, adapted from *Skyways* by Charles Gilbert Hall.

The color and halftone drawings in this book are by Miss Kate Seredy. The line drawings are by Mr. George M. Richards. The construction and line work for the maps were done by Mr. J. McA. Smiley, and the art work and airbrush rendering were done by Mr. Leonard Ralph Sorge.

Special mention should be made of the following: the late Flournoy Bryant Clark; Dr. Laura Cushman, principal, Miss Catherine Wright, librarian, and Mrs. Julia Lawrence, former fourth-grade teacher, The Cushman School, Miami, Florida; the Latin-American Division of the Public-Relations Department, Pan-American World Airways. The authors also wish to thank Gontran de Poncins, author of *Kabloona* (Reynal and Hitchcock, 1941), for first-hand information about the ways of living and psychological reactions of the Seal Eskimos who inhabit King William Island.

Preface

The Living Together Series replaces separate elementary-school courses in geography, history, and the other social studies. These books provide an introduction to the important facts and principles of history and geography commonly included in the elementary-school curricula of the nation. The series as a whole has one major aim—to develop informed and loyal American citizens.

Subject matter of the series

Ten aspects of social living around which man's activities center give serial unity to the content of the books. These aspects—the vitally important activities of man's life—are communication, conservation, consumption, education, the expression of aesthetic and spiritual impulses, government and group living, home living, production and making a living, recreation, and transportation. They are related again and again to the new needs, interests, and situations which emerge in each grade. Consequently mastery of fundamental facts and the development of basic understandings are insured.

These books present the essential values and principles of geography, history, and the other social studies by using each of these subject-matter areas in helping pupils learn about the peoples, resources, traditions, and customs of the different regions of the Old World and the New. Geographic principles and influences are illustrated in numerous ways so that children may understand the growth and development of their own country and that of the other important regions of the world. At the same time rich historical materials point up the importance of the deeds and efforts of man in shaping and improving his environment. The subject matter is presented for the most part in an integrated manner, but where understanding can be developed best by emphasis on a single aspect, as a geographic principle, that aspect is made a center of interest.

Knowledge of child growth used

These books provide for the continued growth of the child as an intelligent, responsible citizen by presenting carefully selected social concepts, essential facts, knowledges, and skills in such a way that he will become increasingly self-reliant in his ability to attack social problems on his level of understanding.

Because of the natural interest of children in adventure, accounts of imaginary trips and travel are included from time to time. In addition, because children seek facts and truths these volumes include numerous straightforward accounts of people—their life, work, play, and customs. These people are seen in their true setting, influenced by both their historical background and their present environment. Frequent use is made of the story method, sometimes in brief biographical sketches, sometimes in glimpses of representative scenes or historical flashbacks narrated in the present tense for greater immediacy.

Current learning techniques employed

The authors have been guided by current knowledge of the ways in which children learn. Some of these ways are:

1. *Systematic attention is given to vocabulary building.* The average child has difficulty with his social-studies text largely because of the number and nature of new geographic and historical terms. In this series new geographic and historical terms have been carefully selected for each grade level. When a new word or concept is introduced, it is italicized and defined at the point of first mention and repeated in a logical manner. These new words and terms are listed at the ends of sections for purposes of drill and collected in a glossary for ready reference. In general, the carrying vocabulary has been kept at one grade lower than the grade for which the individual book is intended. Pronunciations of difficult words are given both in the text and in the end

matter. All of these factors make the books of the series easy of approach and comprehension.

2. *A variety of interesting, challenging visual aids are provided.* The visual aids offer eye appeal. They also strengthen the content both by explaining it and by supplementing it. Many interesting and challenging photographs are included to aid the child in gaining understanding of the history and geography of the various regions. Maps, some in color, many with modelled terrain, and many of the special-purpose variety serve to clarify the text and to interest the child in gaining information about places beyond his home-horizon. Illustrated charts to help the child to pictorialize ideas and to orient himself in time and space.

3. *Units culminate in definite learnings.* Unit introductions stimulate the desire to learn and help the child to select and organize the facts, skills, and understandings he encounters. But if the knowledge he gains is to be meaningful, the child needs opportunities to use the things he learns and to develop acceptable behavior patterns. Exercises and projects at the ends of units help him to test himself on his achievement in definite tangible learnings and provide many opportunities for application to real situations. The authors offer these in the belief that the time for pupils to learn and to apply the attitudes, habits, and skills of democratic living is in the present.

Social concepts emphasized throughout

The concepts upon which the series is built are logically introduced and carefully developed. They have been selected from such basic social activities as (1) ways of making a living in the past and the present; (2) the development of institutions—the family, the school, the church, government and self-government; (3) the need for co-operation both in primitive and complex cultures; and (4) the progress of democracy in an interrelated world. Such concepts provide the child with a basis for acquiring meaningful knowledge and understandings upon which to build a satisfactory life.

Living Together Around the World is designed to acquaint the child with fundamental facts about the earth on which he lives, the people who share it with him, and the relation of the earth and its people to his own way of living. Four broad types of environment different from his own are developed—the hot, wet climate of the tropics, the cold climate near the poles, the dry climate of the desert, and the cold climate of high altitudes. A primitive culture representative of each environment is treated in detail, and in each case a further example of a people—primitive or civilized—living under similar conditions is presented more briefly.

In the treatment of the four representative cultures a realistic approach is used. Each way of living is introduced by a story of a native child, written from his own point of view. In it he faces some problem inherent in his environment, yet having as its basic cause a human element common to boys and girls of our own land. The pupil reader identifies himself with the child in the story, and the child's way of living becomes natural in that setting as the adventurous plot unfolds. This vicarious experience in another type of culture gives the young reader a background for understanding the particular way of living described in the preceding story and extends the discussion to include similar areas in other parts of the world.

The pupil comes to see that different customs may result from the same basic factors, such as climate, natural resources, and social heritage. He also sees that the same fundamental human traits, such as integrity, industry, courage, and co-operation, form the only basis of any satisfactory way of living, from the most primitive to the most highly civilized. This emphasis upon likenesses rather than differences enables him to realize that the great causative factors underlying their ways of life underlie his own, though they may affect it differently. Thus he builds up an attitude of worldmindedness.

The history of many of the changes that man has wrought in his world is presented in a section dealing with invention, transportation, and communication. The interdependence of men in effecting progress is stressed. The contribution to world betterment which a single life may make is also brought out. These concepts are presented at the child's activity level and point inspiringly toward definite, growth-building action.

—The Authors

Contents

LIST OF MAPS

LIST OF CHARTS

Where Are You?

Do you know where you are? If you are in school when you read this question, you may answer, "Yes, I know where I am. I am at school." That would be true, but it is only part of the truth.

Suppose that you could talk with a fish that lives in a tank of water. If you asked him that question, he might answer, "Yes, I know where I am. I am in a great big world all made of water. I am the only living thing in the world."

If he answered in that way, it would be because he cannot see beyond his tank of water. All of the world that he knows is right there in the tank with him. He does not even know where the food that is dropped into his tank comes from. He does not know how he gets fresh water to keep him living.

Of course you can see farther than a fish. But even you can see only a small part of the world in which you live. You may be very much surprised at what you learn about some faraway places. But you have an advantage over the fish, or any other animal. You are able to read, and understand pictures, and imagine things that you have never seen at all.

With the help of this book you can find out what lies beyond the small part of the world you can see.

You can find out about other people who share this world with you. You will find that some of them live very differently from the way you live.

You can learn why people in different parts of the world often have different ways of living.

You will find that this world has not always been just as it is today. Men and women, boys and girls, have made changes in it. You will see some of the ways in which these changes were brought about.

You need to know all these things because you too will help to make changes in this world of ours. You can help to make it a safer, or more comfortable, or happier place for yourself and others.

PART ONE

The World in Which We Live

1. Do you know what the world is really like?
2. If you could see the whole world, how would it look?
3. Where are you in this great world in which we live?
4. Do you know in what country and state you live?
5. How did men find out what the whole world is like?
6. Do we already know all we can learn about the world?

What the Whole World Looks Like

Have you read the book, "Alice's Adventures in Wonderland"? If you have, you remember that Alice often ate some magic food. This food made her grow tall enough or small enough to do whatever she wanted to do. It might be fun if Alice were here now. She might give you magic food that would make you grow big enough to see the whole world at once! You would have to grow far taller than the biggest giant you have ever read about to be big enough for that!

But if you could see the whole world at once, you would see that it is nearly round. It is almost as round as a ball. It is called a *sphere,* because a sphere is round like a ball. This great sphere on which you live is named the *earth.*

You can never grow big enough to see the whole earth at once. But you may often see a small model of it, made to look like the real earth. We call such a model of the earth a *globe.* By looking at a globe we can get a very good idea of what the whole earth is like. Have you a globe at school?

Even when we look at a globe, however, we cannot see all of it at once. We cannot see through it. When we look at a globe, we can see only half of it at once. Half a sphere is called a *hemisphere.*

We can look at the Eastern Hemisphere from one side. Then we can go around to the other side—or turn the globe around—and look at the Western Hemisphere. We can see the Northern Hemisphere by looking down on the globe. We can see the Southern Hemisphere by getting under the globe and looking up at it. These four hemispheres are shown on pages 6–9. At which hemisphere is the boy on page 4 looking?

THE NORTHERN HEMISPHERE

This is a map of the northern half of the earth. It is called the Northern Hemisphere. All the blue part is water, and the rest is land. The white parts are ice-covered land. This map shows the part of the globe that you see when you are above it and are looking down on it.

THE SOUTHERN HEMISPHERE

This is a map of the southern half of the earth. It is called the Southern Hemisphere. See how much more water there is than land. Notice how much ice-covered land there is. This map shows the part of the globe that you see when you are beneath it and are looking up at it.

THE WESTERN HEMISPHERE

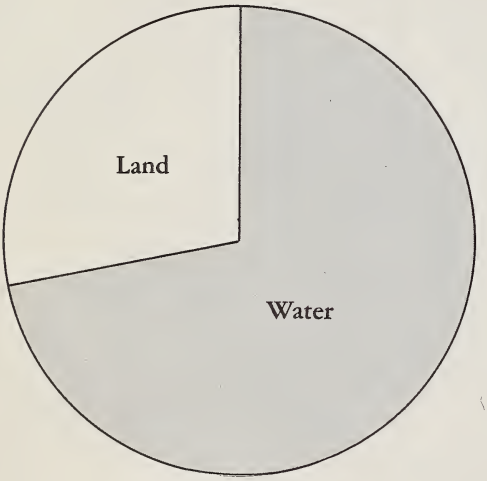
This is a map of the western half of the earth. It is called the Western Hemisphere. All the water is colored blue. See how much of this half of the earth's surface is water. This map shows the part of the globe that you see when you are looking at it from one side.

THE EASTERN HEMISPHERE

This is a map of the eastern half of the earth. It is called the Eastern Hemisphere. See how much of this half of the earth's surface is water. Can you find some ice-covered land? This map shows the part of the globe that you see when you are looking at it from the opposite side.

When we look at a globe we see only the outside of it. It shows what we call the *surface* of the earth. The earth's surface is made up of land and water.

You may be surprised to learn that there is much more water than land on the surface of the earth. You live on land and spend almost all your time on land. So perhaps you think of the earth's surface as being mostly land, with only a little water here and there. If you think that, you are thinking like the fish we talked about.



The circle above shows you how much more water than land there is on the surface of the earth. You can see that nearly three fourths of the earth's surface is water.

Look at the maps of the earth on pages 6, 7, 8, and 9. You will see that there is much less land than water. In fact, only one fourth of the earth's surface is land. Three fourths of the earth's surface is water. The picture on this page will give you an idea of how much more water than land there is on the earth.

The bodies of land on the earth's surface

There are seven large bodies, or parts, of land on the earth's surface. We call these large bodies of land *continents*. Each of the continents has a name of its own. They are called North America, South America, Europe, Asia, Africa, Australia, and Antarctica.

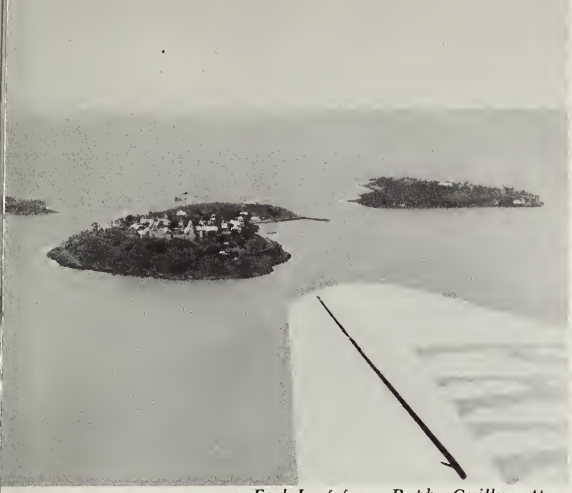
Find each of the continents in the maps of the earth on pages 12, 13, 14, and 15. If you have a globe in your room, find the seven continents on that, too. You will notice that Europe and Asia are really one big body of land. But they are separated by very high mountains, and they are called separate continents.

Besides the seven continents, there are many *islands* scattered about over the earth's surface. Do you know what an island is? It is a body of land that is surrounded by water.

Two of the continents are very large islands. Look again at the maps on pages 12, 13, 14, and 15 and find the two island continents. There are many other islands that are not big enough to be called continents. Some islands are only tiny bits of land sticking out of the water.

The bodies of water on the earth's surface

Look again at the maps on pages 12, 13, 14, and 15. You will see that the continents are separated by large bodies of water. These are called *oceans*.



Earl Leaf from Rapho-Guillumette

Charles Phelps Cushing

On the left is a picture of small islands, taken from the air. Notice the wing of the airplane. On the right is a picture of San Francisco Bay in California. The bridge across it is very long.

The two largest oceans are the Atlantic Ocean and the Pacific Ocean. Find them on the maps on pages 12, 13, 14, and 15. Next in size are the Indian Ocean and the Arctic Ocean. The Arctic Ocean is in the Northern Hemisphere. The Indian Ocean is in the Southern Hemisphere. Find the Arctic Ocean and the Indian Ocean on pages 12, 13, 14, and 15.

You will see that there are many smaller bodies of water on the earth. There are seas, lakes, rivers, and *bays* or *gulfs*. When part of a large body of water extends into the land, that part is called a bay or gulf. Sometimes a gulf or a bay is as big as a small sea. Look below to see how bays or gulfs, lakes, and rivers are shown on a map.

This is how bays or gulfs, lakes, and rivers are often shown on a map. You can see that the river has smaller streams running into it. Can you find one large island and one smaller one?

THE WESTERN HEMISPHERE

Here is another map of the Western Hemisphere. Which four continents are named on this map? Point to the two largest oceans. What are they called? How many lakes do you see? How many rivers can you count? Find several gulfs or bays. Find several islands.

THE EASTERN HEMISPHERE

Here is a map of the Eastern Hemisphere again. What five continents can you see? Which three oceans are named? Which ocean is shown but not named? Find two island continents and some large islands. Point to several bays or gulfs. Find a number of lakes and rivers.

THE NORTHERN HEMISPHERE

Here is another map of the Northern Hemisphere. Which five continents show on this map? Can you see all four of the oceans? Find a very large ice-covered island. This is the largest island on the earth. Find several gulfs or bays. Find some lakes and some rivers.

THE SOUTHERN HEMISPHERE

Here is a map of the Southern Hemisphere again. Name the four continents that are shown. Which continent is covered with ice? Which two are island continents? Find several smaller islands. Which three oceans can you see? Point to several rivers. Do you see any lakes?

MAKING A GLOBE

Would you like to make your own model of the earth?

On pages 261–264 of this book you will find directions for making a globe. The materials are not hard to get, and the globe is fun to make. It will help you to understand more about the world in which you live. You will be able to make good use of it many times as you continue to read this book. Follow the directions carefully.

LETTING A DICTIONARY HELP YOU

Read the list of words below. Do you know the meaning of each of them?

hemisphere	island	sphere
surface	bay	ocean
continent	gulf	earth
	globe	

If you are not sure of the meaning of a word, let a dictionary help you. A dictionary gives the meanings of words. It also shows how to spell words and how to say them correctly. The words in a dictionary are in the order of the alphabet.

On page 265 of this book you will find a word list or "little dictionary." It has in it the words listed above. Before you begin using your word list, read the directions at the top.

Now write each word in the above list on a sheet of paper. After each word write its meaning. If a word has more than one meaning, write the one that is used in this chapter.

GETTING FACTS

Do you know what facts are?

A fact is anything that is true. Some people always notice the facts in whatever they read. They learn to tell important facts from unimportant ones. And they remember the facts that are important. There are others who do not give much attention to the facts they read.

Which kind of reader are you? Below is a little test that you can give yourself. It will show you whether you have noticed the important facts given in pages 1–15 of this book.

A SELF-TEST ON GETTING FACTS

When each of the sentences below is finished correctly, it will tell a fact.

Write each sentence on a sheet of paper and add the word that is needed to make it tell a fact.

The word that finishes the first sentence correctly is **sphere.** So use **sphere** to finish that sentence. Then finish the other sentences correctly.

Number each sentence as it is numbered in this book. Draw a line under the word that you add to the sentence. Do not write in this book.

1. The earth is shaped like a ___.
2. The surface of the earth is made up of large bodies of ___ and ___.
3. The larger part of the earth's surface is covered with ___.
4. There are ___ large bodies of land on the surface of the earth.
5. The large bodies of land on the surface of the earth are called ___.
6. A model made to look like the earth is called a ___.
7. When we look at a globe, we can see only ___ of it at one time.
8. One half of the earth is called a ___.
9. When we stand above a globe and look down on it, we see the ___ Hemisphere.
10. When we stand under a globe and look up at it, we see the ___ Hemisphere.

Be sure that you have spelled correctly all of the words written on your paper. If you are not sure about the spelling of a word, find it in your word list.

HELPING YOURSELF

Did you have trouble in thinking of the words needed in the sentences above?

If you did, you need to learn more about getting the facts from what you read. Here are some things to do that will help you to learn facts:

Know every word.

Perhaps as you read the pages of this chapter, you passed over some words that you did not understand. That would keep you from learning all the facts. Look in a large dictionary for words you do not know. The oftener you use a dictionary, the easier it will be for you to find things in it.

Notice what the words say.

It may be that you knew all the words but just did not think about what they said as you were reading them. When you have read a group of sentences, stop and see whether you remember what they have told you. If you do not, then read the sentences again to find out what they said.

If you make a habit of doing these two things, you will become a better fact-finder. And learning to get the facts from what you read will make your work easier and more interesting.

LEARNING FROM MAPS

Maps are very useful in telling us things that we need to know. It is important to learn to read them well.

See if you can find the answers to the following questions by looking at the maps on pages 6–9 and 12–15, and by reading what is said about them in this chapter.

1. In order to see all of the Northern Hemisphere must you look down on the globe, up at the globe, or at one side of it?

In which of those ways must you look at the globe to see the Southern Hemisphere? To see the Eastern Hemisphere? To see the Western Hemisphere?

2. Does the Western Hemisphere show more continents than the Eastern Hemisphere?

3. What two large continents form most of the land in the Western Hemisphere?

4. What five continents may be seen in the Eastern Hemisphere?

5. What continents lie mostly in the Eastern Hemisphere, but partly in the Western Hemisphere?

6. What ocean is in the center of the Northern Hemisphere?

7. What continent is in the center of the Southern Hemisphere?

8. Which has more land, the Northern Hemisphere, or the Southern Hemisphere?

9. Where is the largest island on the earth? You can find its name on page 20. In which two hemispheres is it?

10. Which one of the four hemispheres shows the least land and the most water?

11. What two oceans may be seen in each of the four hemispheres?

12. What are the two island continents? In which two hemispheres do you find both of them?

13. On a separate sheet of paper write a question of your own that can be answered by looking at the maps on pages 6–9 or 12–15. Let a classmate answer it.

MAKING SAND MAPS

Lay a sheet of glass over blue paper. Make believe that the glass is water. Take some wet sand and make an island and some other land on top of the glass. Make a bay or gulf, a lake, and a river. All the water will be blue. Look at the map on page 10 if you need to.

Your Own Place on the Earth

You have learned many things about the world in which you live. You know that the earth is a sphere—that it is almost as round as a ball. You have learned that only a quarter of the earth's surface is land and that the rest is water. You have learned about the different bodies of land and of water on the surface of the earth. But you have not yet found the answer to the question, "Where are you?"

You now know that the land on our earth is divided into seven continents. Most of the people live on one or another of these continents.

If you do not know which continent you live on, you will find out in the next few pages. Then you can tell in which half of the world you live—the Eastern Hemisphere or the Western Hemisphere. You will also be able to tell whether you live in the Northern Hemisphere or the Southern Hemisphere.

When you find your own continent on the globe, you will see that it is a large body of land. It would be hard to find your home on this great continent unless you knew just where to look. But you will learn, as you read on, that continents are divided into smaller parts called *countries*. One of these countries is yours.

Your country is in turn divided into still smaller parts called *states*. And one of these states is yours.

Read on and find out for yourself what continent, country, and state you live in. You will learn where each of them is, on this great sphere.

After you have found your state, you will want to know where in the state your community is. Then you will be able to answer the question, "Where are you?" You can point out on the globe almost the exact spot where you are right at the present moment.


ASIA
ARCTIC OCEAN
GREENLAND
ALASKA
CANADA
ATLANTIC OCEAN
UNITED STATES
MEXICO
GULF OF MEXICO
CUBA
HAITI
DOMINICAN REPUBLIC
PACIFIC OCEAN
BRITISH HONDURAS
HONDURAS
GUATEMALA
EL SALVADOR
NICARAGUA
COSTA RICA
PANAMA
SOUTH AMERICA
NORTH AMERICA

NORTH AMERICA AND THE WESTERN HEMISPHERE

On the left is a map of the continent of North America. The colors show the different countries that are on this one continent. What color is the United States of America on this map? Above is a map of the whole Western Hemisphere. What color is the United States of America on this map?

Charles Phelps Cushing

YOUR CONTINENT, COUNTRY, AND STATE

Do you remember the names of all the continents? They were given on page 10. Find each of the seven continents on the globe or on the maps on pages 12–15.

The continent on which you live

You live on the continent of North America. Find it again on the globe and look at it carefully.

Is North America in the Eastern or Western Hemisphere? Is it in the Northern or Southern Hemisphere?

Look at the large map of North America on page 20. This map shows only the part of the earth that has the continent of North America on it.

On this map north is toward the top and east is toward the right. What ocean is north of North America? What ocean is east of it? What ocean is west of it?

You will notice that on this map the parts of North America are in different colors. That is to show you how this continent is divided into different countries.

The country in which you live

Our country is the United States of America. On this map our country is colored green. Of course it might have been any other color just as well. When you make a map of North America, you can make the United States of America any color you wish. You can choose the colors for the other countries too. The colors you choose may please you more than the colors on this map.

Find the United States of America on the map of the Western Hemisphere, page 21. What color is our country on that map?

Sometimes people do not take time to say the whole name of our country. The name is rather long. Instead of saying "United States of America," they say "America" or "United States." Neither of these names is just right. Our country is only a part of North America. And there are other countries that have "United States" as a part of their names. But here at home we know what people mean when they use these shorter names for our country.

Here is the flag that stands for the United States of America. It is your flag, because it stands for your country. You know the colors of this flag, don't you? Many people call our flag the "Stars and Stripes." Do you know why?

The state in which you live

In the lower grades you learned how people in a community work together to do things they could not do alone. You know that people in a community work together to have schools, or firemen and policemen to protect their homes. They work together to have water systems and parks and libraries. There are many, many ways in which the people of a community can work together.

The people of different communities also work together to help one another. Many communities join together in making what is called a state. The communities in one state work together for the good of all the people in the state.

One of the many ways in which communities work together is by having a state *health department*. The state health department helps the people in all of its communities to stay well.

The people of a community may want to know whether their water supply is pure. They can send a little of the water to the state health department and have it tested. The people in the state health department are paid for their work with tax money. This money comes from people in all the communities of the state.

State parks give enjoyment to many. These young people are having a good time in state parks.

Charles Phelps Cushing

Lois Ruth from Cushing


N
W
S
Seattle
Olympia
WASHINGTON
Spokane
Portland
Salem
Eugene
OREGON
IDAHO
Boise
Missouri River
MONTANA
Butte
Helena
Billings
NORTH
DAKOTA
Bismarck
SOUTH
DAKOTA
Pierre
WYOMING
Pocatello
Casper
Ogden
Salt Lake City
Cheyenne
NEBRASK
NEVADA
Reno
Carson City
Sacramento
CALIFORNIA
San Francisco
UTAH
Denver
COLORADO
Pueblo
KAN
Las Vegas
OKLAH
Los Angeles
ARIZONA
Santa Fe
Albuquerque
NEW MEXICO
Amarillo
Oklaho
San Diego
Phoenix
Tucson
El Paso
T E X
PACIFIC OCEAN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Montpelier
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NEW HAMPSHIRE
Concord
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MASSACHUSETTS
Albany
Providence
RHODE ISLAND
Hartford
CONNECTICUT
New York
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Lansing
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Madison
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Duluth
NESOTA
Minneapolis
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Mississippi River
City
IOWA
Des Moines
Davenport
Chicago
Gary
Toledo
Cleveland
Pittsburgh
OHIO
Fort Wayne
Wheeling
Peoria
ILLINOIS
Indianapolis
Columbus
Cincinnati
Springfield
INDIANA
WEST VIRGINIA
Baltimore
Annapolis
Dover
DELAWARE
MARYLAND
Washington
Richmond
Missouri
Kansas City
River
Jefferson City
St. Louis
Evansville
Louisville
Frankfort
Charleston
Huntington
Roanoke
Norfolk
VIRGINIA
KENTUCKY
MISSOURI
Winston-Salem
Raleigh
Nashville
Knoxville
NORTH CAROLINA
Charlotte
ARKANSAS
River
TENNESSEE
Chattanooga
Memphis
SOUTH
Columbia
CAROLINA
Fort Smith
Little Rock
Mississippi River
Atlanta
Birmingham
Augusta
Charleston
MISSISSIPPI
ALABAMA
GEORGIA
Savannah
Shreveport
Jackson
Vicksburg
Montgomery
LOUISIANA
Jacksonville
Baton Rouge
Mobile
Tallahassee
FLORIDA
New Orleans
Tampa
Miami
GULF OF MEXICO
ATLANTIC OCEAN

Charles Phelps Cushing

Our Coast Guard protects our shores. This is another way in which all our states work together.

The state health department looks after the people's health in other ways, too.

Forty-eight states all working together

Our country is divided into forty-eight different states. That is why our country is called the United States of America. Forty-eight different states are united to make one country and to work for one another's good. The forty-eight states, working together, can do many things that one state could not do alone.

It is all of the states, working together, that provide our mail service. When there is a war, all the states work together to protect the people of our whole country. They can do this together far better than any one state could do it alone.

Providing mail service and protecting us in war are only two of the many services the forty-eight states can give by working together. Perhaps you know about some other ways in which the states work together. You can find out about many more.

On pages 24–25 there is a large map that shows all of the forty-eight states of our country. This map also shows the names of some of the large cities in each state. In which one of these states do you live? Find your state on this large map.

Now you know where you are

1. You are on a great sphere called the earth.

2. On the surface of the earth are both land and water. There are seven large bodies of land, called continents. You are on the continent of North America.

3. There are several different countries in North America. One of them is called the United States of America. That is our country. Our flag, the Stars and Stripes, stands for that country.

4. Some countries are divided into states. Our country has forty-eight different states. There is a star in our flag for each one of these states. In which state do you live?

5. Each state is made up of many communities that work together. What is the name of your community? If you live in a large city, you may find it on the map on pages 24–25. If you live in a smaller community, you can find the name of a large city not far away. Then you can see just about where you are on this great sphere, the earth.

WHEN YOU MAKE PLANS

As you and your classmates read this book, you will often want to make plans for doing things together. Have you learned to work well in a group? Or do you have some of the troubles listed below?

1. Do several people try to talk at the same time? Or have you agreed on a plan for having only one person speak at a time?
2. Does one person take more than his share of time? Or do you give each person a turn?
3. Do some of you get angry if you do not have your own way? Or do you all agree to the plan that pleases most of the group?
4. Do you waste time by talking about too many different things? Or do you stick to the subject?

If you have any of these troubles, talk them over together. Decide on a few good rules to help take care of these problems. Then see how well you can keep the rules.

DIVIDING THE WORK

Divide your class into three groups. Each group should choose a leader and plan its work together. Let each group find out all it can about one of the subjects below and report on it to the class.

1. How the people in my community help one another by working together.
2. How the people in my state help one another by working together.
3. How the people in my country help one another by working together.

ADDING TO YOUR GLOBE

If you have made a globe, draw the United States of America on it. Look at the map on page 20 to see where the borders are. The northern border goes through the middle of four large lakes.

Put a dot on the globe where your home is.

A QUIZ PROGRAM

Pretend that you are giving a radio program. Use a small box on a stick for a microphone. A microphone is a little instrument into which radio speakers talk.

One pupil should have charge of the program. The person in charge of a program is called the M. C., or Master of Ceremonies.

Another pupil should keep score. Divide all the others in the class into two teams.

Two pupils come to the microphone at one time, one from each team. The M. C. asks one of them a question. If the pupil answers correctly, he scores one point for his team. If he misses, the question is passed on to the second pupil, who scores for his team if his answer is right. The second pupil is then given a question of his own. If he misses, it is passed back to the first pupil.

Each pupil who goes to the microphone has a chance to score one point for his team if he answers his own question, and another point if he answers one that has been missed. Then the two pupils are seated, and two more come to the microphone.

The group that scores the highest number of points wins the quiz. Make up questions about the maps on pages 20 and 21. The four questions below will give you an idea of the kind to use. Make up other questions.

1. What country lies north of the United States of America?
2. What are the three largest countries on the continent of North America?
3. What ocean touches North America, but does not touch South America?
4. What two large countries touch the Gulf of Mexico?

Ferdinand Magellan was a man of great courage and strong will power. Here we see him on his flagship, the *Trinidad*. These five small ships are setting out to sail around the earth.

How Men Know What the Earth Is Like

We have talked about what the earth would look like if we could see all of it at once. Of course nobody ever did see all of it at once—or even all of one side of it. There never has been a real magic food, such as Alice ate, to make anyone grow big enough for that.

Yet before men could make a globe that looked like the earth, they had to discover what it was really like. It took a long, long time to do this.

There are many true and wonderful stories telling how men learned the earth is a sphere, how they sailed unknown seas and found new continents. There is not room enough here to give all of these stories.

There is room, however, to tell how men first learned that the earth is a sphere. Maybe you thought people always knew that, but they certainly did not. Less than five hundred years ago most people thought that the earth was as flat as a rough table. It looked flat to them, except for the mountains, because they could see only a little at a time.

Most people are willing to believe that things are just as they seem. It is a good thing, however, that there are a few men and women who ask "How?" and "Why?" Such people are the ones who find out more and more interesting facts about the world in which we live. They pass on to others the new truths they learn.

Here is the story of one such man. He dared to think and to wonder. He dared to go and search out facts for himself. He made a wonderful new discovery that has helped to change the history of the world. Read on and see what this great discovery was and how much courage it took to make such a discovery.

About four hundred fifty years ago a dark-eyed baby boy was born in the little country of Portugal. Find Portugal on the map on page 32. It is on the continent of Europe. The boy's name was Ferdinand Magellan (*mȧ jĕl'ăn*).* He grew into a strong lad, loving the fields and forests. He learned to hunt in the woods. Little did he dream that someday he would make the greatest *voyage* the world had ever known. A voyage is a journey across the water.

Serving as a page in the king's palace

It all began when Ferdinand's father told the boy he was to go to the city where the king lived. Ferdinand was to become a page, or serving boy, in the palace of the king.

No doubt Ferdinand was afraid at first. He had lived such a simple life at home. How would he know what to do or say in the king's palace?

"Just hold up your head," his father told him. "Look them all in the eye. And above all, never depend on anyone but yourself!"

Ferdinand remembered his father's words. And he did depend on himself. You can see that from the things that happened later

He was quick to learn, and his new work as page soon became easy enough for him. At first he missed the hunting which he had enjoyed at home—but not for long. He found something he liked even better. He found the ships.

* On page 265 there is a key to these marks.

Ferdinand's new home was near the sea. The ships came up a river to the city. They were just little sailing ships made of wood, for that was the best they had in those days. But to the boy Ferdinand they seemed very wonderful indeed. He spent every spare moment watching them come and go and seeing the goods they brought.

He thought the most interesting ships were those that flew the flag of another small country called Venice. They were loaded with more valuable goods than the others. They brought silk and jewels and *spice*. Ferdinand knew that the spice was best of all. He knew that a whole country could grow rich from trading in spice alone. Spice is used for flavoring food. *Pepper* and *nutmeg* are spices.

Why people wanted spices

The world of Ferdinand's time was very different from the world of today. Pepper was not a thing that was used on everybody's table, along with the salt, at every meal. Nor could it be bought at a corner store for a few cents. It was so valuable that the rich people paid huge sums of money for it. The poor people would do without the things they really needed in order to buy a tiny bit of it.

Pepper was often used in place of money. Merchants closed the windows when they weighed the ground spice. They were afraid the wind might blow a little of it away.

You see, people did not then have the many different kinds of food that we have

now. There were no trains or fast ships or airplanes to bring fruits and vegetables from far places. There was no way to keep meats and milk and butter fresh for long. And there was no such thing as food put up in cans. They knew only two ways of keeping food: to salt and dry the meat and to dry fruits and vegetables. It was not often that they had fresh things to eat.

People got very tired of eating the same dried food day after day, day after day. They found that a little spice, such as pepper or nutmeg, would give the food a much pleasanter taste. And spice helped to keep foods from spoiling too. So spice became very popular.

But spices were *scarce,* or hard to buy. The people of Europe did not know where spices really came from. All they knew was that *traders*—people whose business is trading—brought them from the markets of India. India is a country far to the east of Europe. You will find India on the map on the next page.

Then why didn't the people of Portugal go to India and get all the spices they wanted? That is another story!

Why spices were scarce

A trip from Portugal to India would have been a very different matter in those days from what it is today. Look again at the map on page 32. Notice how little of the world was known to the people of Portugal at that time. You will see that people knew of no way to go the whole distance from Portugal to India by ship. They did not know that ships could sail all the way around Africa.

The only body of water that they knew much about was the Mediterranean Sea. Find the Mediterranean Sea on the map on page 32. Notice how small it is. People believed that the earth was flat. They thought that ships would fall right off the edge if they sailed too far out on the ocean. That is, the ships would fall off if their sailors lived to reach the edge!

Spices were brought across Asia on the backs of camels. It took months to make this journey.

Historical Pictures Service

This map shows how much of the world was known to the people of Europe when Magellan was young. Look at the key below the map. It shows that the white parts stand for the known world and the dark gray parts for the unknown world. How are the land and sea routes to India shown?

For people believed that the waters far from land were full of great sea animals. They thought these animals would eat up all the sailors on a ship and still be hungry for more. No wonder people were afraid.

How the spice trade was carried on

During this period most of the people of Asia were unfriendly toward the people of Europe. The people of Asia would not let traders from Europe cross their land to get spices from India. And so the spice trade was carried on in two separate parts. Follow your map as you read on.

The traders of Venice would cross the Mediterranean to the eastern shores and dock their ships at the Mediterranean *seaports*. (A seaport is a city or town on the sea, at which ships may load and unload.) There they would exchange goods with traders from Asia. These traders had been to India to get spices and other valuable things, such as silk and jewels.

Bringing spices to the Mediterranean

The traders of Asia had at least two ways of getting spices from India. One was to carry them all the way by land on

This map shows Vasco da Gama's route from Portugal to India. Why was this voyage such an important one? What did the people of Europe learn about the world as a result of this voyage? How much more land is white in this map than in the map on the opposite page?

the backs of camels. It was a long, slow journey and often a dangerous one. Some of the traders did not get back with their loads. Bands of robbers often hid near the wild mountain passes. These robbers were waiting to kill the traders if they could and take their loaded camels. Find this route on the map on page 32.

The other way of carrying spices to the Mediterranean was to go by sea most of the way. The traders loaded their ships at the markets of India and sailed around through the Red Sea. Find the Red Sea and trace the sea route.

When the traders reached the northern end, they unloaded their *cargoes,* or loads. Other men took the spices across the narrow strip of land to the Mediterranean Sea. There the spices were bought at high prices by the traders of Venice. The traders of Asia made a great deal of money by carrying and selling spices. No wonder they would not let the people of Europe go to India to get spices!

Why the country of Venice was richer than Portugal

Venice was strong enough to keep other countries in Europe from getting much of the Mediterranean spice trade. This

Da Gama prepares for his long voyage as the young page, Ferdinand Magellan, stands close by.

little country had grown very rich by selling spices to Portugal, Spain, and other countries. The people of Europe were willing to pay huge prices for these valuable goods from India. They knew of no other way to get them.

The boy Magellan watched the ships from Venice with their valuable cargoes. He thought how wonderful it would be to sail on such a ship for his own country.

Sending out explorers to find a new way to India

You can guess how excited he was when he heard the news at the palace. The king of Portugal was going to send out some *explorers* to try to find a new way to India! An explorer is a traveler who is looking for something new.

This group of explorers would be led by Vasco da Gama. They would sail down the west coast of Africa and find out whether there was water around it. An earlier explorer had claimed there was. If there was—and if there were no great sea animals or boiling water—people could sail from Portugal to India. Then Portugal too could grow rich by trading in spice.

How Ferdinand listened to the exciting talk at the palace! He stayed near Da Gama whenever he could and heard the sea captains offering their help. He heard Da Gama talk with those who were building the ships. He heard him talk about the things that would be needed on the dangerous journey. Friends came to wish Da Gama a safe voyage. There would be wealth for all Portugal if he should discover a new way to India.

Of course you can guess what Ferdinand wanted as he listened to this talk. He wanted to go with Da Gama! But no boys would be allowed on such a trip. Only the bravest and strongest of sailors could go with Da Gama.

Da Gama's success in reaching India by sea

Two years passed before Vasco da Gama came back from the long journey. He had found a way to India! There was water all around the southern end of Africa. And he had found no boiling seas or terrible sea animals. But he did find it hard sailing part of the way. Look at the map on page 33 to see what route he took.

Da Gama's ships were loaded with valuable goods, such as silks, jewels, and spices. The sale of these brought enough money to pay for the trip sixty times over.

There was great excitement in Portugal. Ships were made ready, and people planned to begin trade with the markets of India. The swift years passed, and Portugal, too, grew rich.

People learned that most of the spices they bought in India really came from some small islands much farther east. They called them the Spice Islands.

The king of Portugal sent soldiers to the East to try to take the Spice Islands for his country. Among these soldiers was Ferdinand Magellan. He had now grown to be a strong and daring young man. For seven years Magellan served as a soldier in the East. During these years a great plan began to grow in his mind.

Magellan's great plan to sail around the world

Some things that Magellan had heard caused him to think of his plan. He had heard about a man named Christopher Columbus, who believed that the earth

Christopher Columbus asking the queen of Spain to furnish ships so he can sail west to India.

Historical Pictures Service

was round. Columbus thought that if he kept sailing in the same direction, he would go around the earth and come back to where he started.

The queen of Spain had let Columbus have three ships. He had sailed west, hoping to find a new way from Spain to India. He had discovered land which he was sure was India. But he had found no spices and no people like those of India.

Magellan heard, too, of an explorer named Balboa (băl bō′*ä*) who sailed to the lands that Columbus had found. Balboa said that he had climbed some high mountains and had looked down on an unknown sea.

"Perhaps there are more new lands to be found," thought Magellan, "and new oceans too."

Thinking and dreaming of what these men had done, Magellan made his great plan. He would go around the earth! He would not turn back, as Columbus had done, as soon as he found land. He would keep going until he had sailed all the way around the earth and had reached home again.

He would find out the size of the earth. He would see if there were countries and oceans that the people of Europe had never heard about. He would find out whether the earth was really round, as Columbus thought, or flat, as most people believed at that time.

Getting ready for the long journey

But how would Magellan get men and ships and supplies for such a long journey? When he returned to Portugal, he asked the king to help him. But the king refused.

This picture of the Strait of Magellan shows how hard it is to sail through this strip of water.

James Sawders—Combine

This map shows the first part of Magellan's route. You can follow this route from Spain, along the coast of Africa, and then across the Atlantic to South America. After sailing along the coast of South America, Magellan and his men struggled through the Strait of Magellan and finally reached the great Pacific.

So Magellan went to the king of Spain and asked him for help. He told the king of Spain that he was sure he would find a new way to the Spice Islands. The king decided to give Magellan the supplies he needed for the voyage.

One day in September, 1519, five ships set sail and headed toward the west. The *flagship,* which led the way, was called the *Trinidad.* The ships were commanded, of course, by Magellan.

For more than a year Magellan had worked hard to get everything ready for this voyage. He had tried to get ready for anything that might happen. He had sailed long enough in the small sailboats of that day to know the dangers that lay ahead.

He and his men must sail without maps and charts to show the way. They might face storms, shipwreck, sickness, or loss of men. Any or all of these things could happen, he knew. But he never guessed the worst of all the dangers that were to come to him and his men.

The beginning of Magellan's troubles

All went well at first as Magellan and his men sailed toward South America. But after some time they ran into very heavy storms. The storms were followed by many weeks of steady rain.

The men began to fear that the food would not last for the whole voyage. They begged to turn back. But Magellan ordered them to eat less so that the food would last longer. And he sailed on.

Magellan was killed in battle on a small Pacific island. Quickly his men escaped to their boats.

Then the men talked of *mutiny*. That is, they began to talk about taking command of the ships themselves. They wanted to turn back against Magellan's orders. When Magellan heard of this, he said, "Even if these men are false, I will not fear them. I will do the work that I have set out to do." And he sailed on.

After a while they landed on the coast of South America. There they were able to get a new supply of food. But even then the men were not satisfied. They still wanted to turn back.

In a few weeks they again set sail along the coast of South America. Winter was coming on. Magellan found a place farther south where the ships could put in to spend the winter. But while they were there, more storms came on. One ship was wrecked.

The men grew more and more unhappy. Now they really did mutiny. Magellan had the leaders put to death. But he forgave the others when they agreed to sail on and do their part.

Passing through the Strait of Magellan

Spring came. The four ships that were left set sail once more. Finally they came to a *strait* at the southern end of South America. Do you know what a strait is? It is a narrow strip of water that connects two larger bodies of water.

Look at the map on page 37 and see the strait through which Magellan's boats had to go. This strait is hard to sail, even with good maps to guide the way. Magellan and his men had no maps. For five weeks they struggled through it.

One morning they found that one of the ships had turned around during the night and slipped away toward home. Only three boats were left now. They

There were not enough men left to man the ships. So they burned one and set sail in the other two.

struggled on. At last they got through the narrow, dangerous strait. It is called the Strait of Magellan to this day.

Sailing across the Pacific Ocean

Suddenly they found themselves in a great and beautiful sea. It was the ocean that Balboa had once seen. But no man had ever sailed across it, so far as we know. After all the storms they had been through, this ocean seemed very calm and peaceful. So Magellan named it the Pacific Ocean, and that is what it is called today. On and on he sailed upon it—on and on.

It seemed to his men that there was no end to this great ocean. That is not strange, for it really is the biggest and widest and deepest ocean in the world. Look at the Pacific Ocean on the globe. You will see that it covers as much of the earth's surface as all of the land put together.

Again the sailors decided that they must turn back. "This ocean has no end," they said. "Soon there will be no more food. What shall we do then?"

But Magellan quietly replied, "Come what may, I will go on and do my work."

Before long the men were nearly starving. They cut up their shoes and soaked them in water and ate them. They caught rats hiding in the ships and ate them. With so little food, and most of it not good, many of the men fell sick. There were hardly enough well men among them to sail the ships.

Reaching the East by sailing toward the west

At last they came to some islands in the Pacific. From the dark-skinned natives they obtained water and coconut milk.

You traced the first part of Magellan's route on the map on page 37. The right-hand map above shows his route from east to west across the Pacific to the island where he was killed. You can follow the route of his men as they returned by way of the Spice Islands and the Indian Ocean. On the left-hand map you can see how the *Victoria* sailed around Africa and back to Spain. Sometimes instead of using two round maps to show the whole world we use a map like the one below. On this map you can trace the whole route of Magellan and his men. Follow this route around the world from east to west. Then compare this map with the two round maps above and the one on page 37. Which do you think is the better way of showing a trip around the world?

The natives also gave them chickens and fish, oranges and bananas. With such good food, the sick men quickly got back their strength.

Best of all, Magellan began to see something familiar about these islands. He noticed many of the same kinds of trees and flowers that he had seen growing in the East. He felt sure he was on the other side of the world from Spain and Portugal. Magellan met some traders and learned from them that he was not far from the Spice Islands. You can guess what good news that was to Magellan and his men!

Before going on to the Spice Islands, Magellan wanted to *explore,* or search, some of the small islands all around. He traded with the natives. He gave them combs and beads and little bells that he had brought along for trading. For these things he received food for his men.

Magellan's death on one of the islands

But a sad thing happened. Magellan and his men got into a battle between two of the native kings. Magellan was hurt and died there not far from the islands he had sailed so far to find.

Quickly Magellan's men got into their boats and set sail. There were not enough men left to man the three ships. So they had to set fire to one and leave it behind. Then the men went on in the other two ships.

When they reached the Spice Islands, they loaded their boats with spices. Then they made ready to set out upon the last stretch of their journey. But their ships were now old and worn. And in trying to take all the spice they could, they had loaded the flagship *Trinidad* too heavily. So it too was lost, and its men had to stay behind on the islands.

Finishing the trip around the world

One lone ship, the *Victoria,* now sailed for home. The way was still long and hard. Storms came up. The weary men grew sick, and one after another of them died. At last the little *Victoria* reached the shores of home. Only eighteen pale, tired men were left to tell the story of their long voyage around the earth. Can you trace their route on the maps on pages 37 and 40?

Historical Pictures Service

This is a drawing of the *Victoria,* the only one of Magellan's ships to return to Spain.

The king praised the captain of the *Victoria* and told him that he was the first man ever to sail around the earth. And so he was. But the real leader in this greatest voyage of all was Ferdinand Magellan. He had learned to depend upon no one but himself when he was just a young boy.

THE EXPLORER

What lies beyond the highest hill?
Beneath the deepest sea?
Or in the thin, cold air above
The sky's blue canopy?

Oh, I must go. I cannot stay.
There echoes in my mind
The call of unseen wonders
In a place that I must find.

Through all the ages it has hid
Where no man's eye might see;
And now, upon the winds of space
It calls to me. To me!

What matter hunger, heat, or thirst?
I follow this clear call;
When human eyes behold that spot,
Mine shall be first of all.

LEARNING MORE ABOUT THE WORLD

After Magellan's ship returned, other men studied the maps and records he had made. Then some of them made interesting voyages and explored new lands and seas. Some found out one thing and some another. As they learned more and more, they made maps and globes to show what the earth's surface is like.

That is just the way it has always been. While many people go along without thinking much about the world, others try hard to learn new things about it. And there are always new things to be learned. In school you will read many interesting stories about brave, hard-working men and women who have discovered new things.

The blanket of air that covers the earth

One of the many things that men are now studying is the blanket of air that

covers the earth. This very important part of the earth lies all around us, yet we cannot see it. It is about 200 miles thick.

Although we cannot see this air, we know that it is there and that we could not live without it. None of the plants or animals on the earth could live without air, either. Even the fish that live in the water must have some air to breathe. The blanket of air that surrounds the earth not only helps us to breathe; it helps us in other ways. We could not hear anything if there were no air, for all sound travels by air waves.

What air has to do with heat and cold

The air holds the sun's heat in the earth, just as a blanket keeps you warm on a cold night. If it were not for this blanket of air, the earth would get cold very quickly at night. In the daytime, when the sun is shining, this blanket keeps the sun's rays from burning the earth. Nothing could live in such heat.

When the air about us is still, we do not feel it at all. But when it moves, we may feel either light breezes or heavy winds. In summer we depend on the cool breezes to make us comfortable. In winter we don't like the cold winds very well! People cannot live if the air about them gets too hot or too cold.

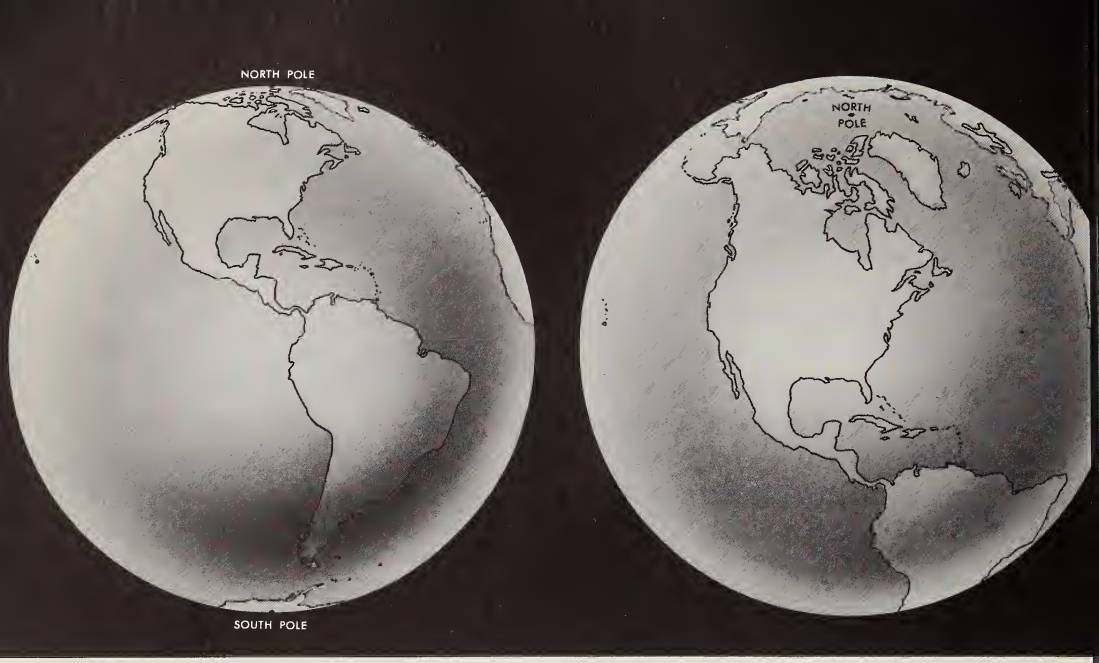
The warmth or coolness of the air is called the *temperature*. We are most comfortable when the temperature of the air around us is about sixty-eight or seventy degrees. What is the temperature in your room now?

How the air helps to make rain

The air also makes it possible for us to have the rain which waters the earth. The sun's heat causes water to pass into the air from oceans, lakes, and streams, and from trees and plants. The water passes into the air as water *vapor*. We usually cannot see water vapor, but it is in the air all about us.

This is one of the United States Army airplanes that set out to fly around the world in 1924.

Charles Phelps Cushing



The warm air next to the earth takes up a great deal of water vapor. Warm air rises. and as it rises, it is cooled. Sometimes something happens to cool the rising air more rapidly, as when it strikes a layer of cold air. Cold air cannot hold as much water as warm air. And so, as the warm air cools, the water vapor in it begins to form drops of water. When these drops grow too large and heavy to stay up in the air, they fall as rain.

Four ways in which the air is a help to us

You can see that the blanket of air around the earth is very important indeed. Remember these facts about it:

1. We must breathe air in order to live. Plants and animals must have air in order to live.

2. Air makes it possible for us to hear sounds.

3. The air helps to give us our weather. When it moves, we feel light breezes or stormy winds. The air helps to make our rain. By day the air protects us from the sun's rays. By night it holds the earth's warmth, like a great magic blanket that cannot be seen.

4. There is still another way in which the air helps us. It gives us a new way to travel. Men have learned how to make *airplanes* fly through the air. Now airplanes travel completely around the earth in the body of air above it.

Two brothers, whose names were Wilbur and Orville Wright, found a way to make airplanes fly. They did this at Kitty Hawk, North Carolina, in the year 1903.

How airplanes make the world seem smaller

In 1924 four United States Army airplanes started out to fly around the world. Their pilots wanted to be the first to fly around the world, just as Magellan set out

The map of the Western Hemisphere at the left of page 44 shows the North Pole and the South Pole. They are at the north end and the south end of the earth's axis. Which way is west on this map? Which way is east? The second map shows the North Pole more plainly, but it does not show the South Pole at all. The third map shows the South Pole very plainly, but it does not show the North Pole at all. Can you tell why?

to sail around the world. Two of the four planes made the complete trip. It took them 175 days to make it. The trip can now be made in less than a week. Every day men are learning more and more about airplanes and how to travel in the air above the earth. What they learn is helping us to find out more about the world on which we live. The airplane is making close neighbors of people who once seemed very far apart.

Why we have day and night

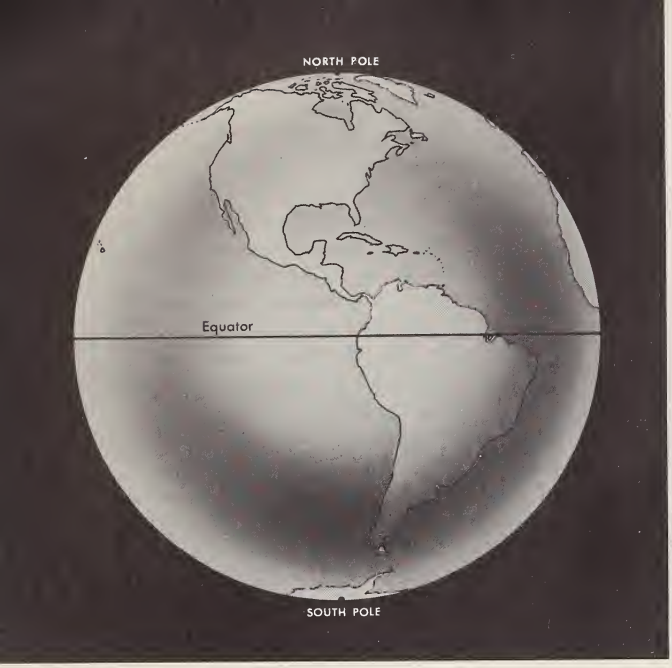
It seems to us that the earth stands quite still. As a matter of fact, it is moving all the time. It turns slowly around a make-believe line through its center. We call this make-believe line its *axis*. The ends of the earth's axis are called its *poles*. One is the *North Pole,* and the other is the *South Pole*. Find the North Pole and the South Pole on the globes above. It takes the earth twenty-four hours to turn around its axis once.

We look at the sun and say it "rises" and "travels across the sky" and "sets." But the sun does not really travel across the sky. It is the turning of the earth which makes the sun seem to rise in the morning and set at night. We cannot see that the earth is moving because everything else on the earth is turning with us.

As the earth turns slowly around every twenty-four hours, first one side faces the sun and then the other. When our side of the earth is toward the sun, we say it is day. When the earth turns so that our side is away from the sun, we say it is night. It is the turning of the earth that tells us when to go to bed and get up.

The earth's motion around the sun

The earth not only turns slowly around its axis once every twenty-four hours. At



On this map of the Western Hemisphere you can see where the equator is. It is just halfway between the North Pole and the South Pole. If you went to the equator, you would see no line. Remember that it is a make-believe line that goes all the way around the earth. What is the weather like at the equator?

the same time it moves in another way, too. Each year the earth moves on a long, long path all the way around the sun. Since there are 365 days in a year, the earth turns around its axis 365 times while going around the sun once. The earth's motion around the sun is very fast.

Where the sun's rays are always hot

While playing outdoors you may have noticed that the sunshine is hotter at noon than in the late afternoon. That is because the sun is higher in the sky at noon, and its rays are more nearly direct. *Direct rays* of sunlight come from a point that is straight overhead. They are hotter than *slanting rays,* such as we have later in the afternoon. The higher the sun rises in the sky, the more direct and hot are its rays.

Around the middle of the earth's surface the noontime sun is almost directly overhead every day of the year. Here the sun's rays are always hot and there is no spring or fall or winter season. It is summer all year long.

We mark this place on our maps and globes by a line around the earth's surface. Of course there is no real line on the earth. We make believe there is a line to mark the place where the noontime sun shines almost directly overhead all year. We call this line the *equator.* The equator is a make-believe line around the earth just halfway between the North Pole and the South Pole. Find the equator on the globe on this page.

Where the sun's rays are always cool

As we move north from the equator, we find that the sun's rays slant more and more. They give the earth less and less heat. At last we reach the North Pole. There the sun gives so little heat to the

earth that the weather is cold all year round.

If we travel south from the equator, we find that the same thing happens. The sun's rays slant more and more, and the temperature gets colder and colder. At the South Pole the sun's rays are so slanting that it is never warm there.

What the sun's rays have to do with temperature

We have seen that different parts of the world get the light from the sun in different ways. We have seen that the way the sun's rays fall upon a place has much to do with its temperature.

There are other things besides the sun's rays that cause a place to be hot or cold. Farther on in this book you will read about some of the other things that affect temperature. Right now, be sure to remember these important facts:

1. At and near the equator the noontime rays of the sun are almost direct all the year round.

2. The farther one travels from the equator, either north or south, the more slanting the sun's rays become.

3. Direct rays of sunlight give more heat than slanting rays do.

Differences in temperature in various parts of the world make a great deal of difference in the way people live. Part Two will tell you about different peoples who share our world and about their ways of living. As you read, see how much the heat or the cold has to do with their way of living.

Robert Peary discovered the North Pole in 1909. Here he leaves his ship to go to the pole.

Historical Pictures Service

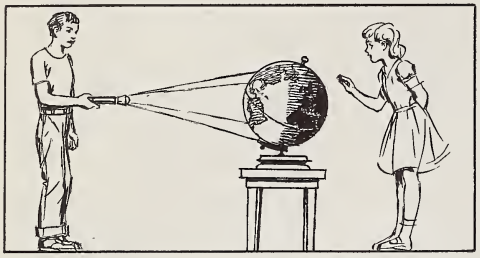
Roald Amundsen discovered the South Pole in 1911. Here he is starting out for the pole.

Historical Pictures Service

MAKING NIGHT AND DAY

This will help you understand how the turning of the earth makes night and day:

Set a globe or a basketball on a table in your classroom. Hold a flashlight so that it lights one side of the globe, as shown below.



Make believe that the globe is the earth and the flashlight is the sun. Notice how the light of the sun falls on the earth. Then see if you can answer these questions:

1. How much of the earth does the sun light at one time?
2. Why does the sun not light all of the earth at once?
3. When it is daytime on the lighted side of the earth, is it day or night on the other side? Why?

With a piece of chalk make a white spot on the globe about where your community is. Now do these things:

1. Turn the globe so it is night in your community.
2. Turn it so it is day in your community.
3. Turn the globe so it is midnight in your community.
4. Turn it so it is noon in your community.
5. Show how far the earth will turn on its axis by noon tomorrow.
6. Show how many times the earth will turn around before noon next Monday.

MAKING DIFFERENT LIGHT RAYS

Do you know why direct rays of sunlight heat the earth more than slanting rays do? This may show you the reason:

Take a flashlight and hold it so its rays shine directly upon the blackboard. If you hold the flashlight straight, so its rays are direct, the spot of light on the board will be round. Draw a line around the circle of light with a piece of chalk.

Now hold the flashlight so its rays slant toward the blackboard. The spot of light will grow and change its shape. Draw a line around the spot made by the slanting rays.

The same amount of light and heat came out of the flashlight both times. But when the rays slanted against the board, they covered a larger space than when they were direct. Of course, the same amount of heat cannot warm a larger space as much as it warms a smaller one. When the sun's rays slant toward the earth, they strike a larger area than when they are direct. Why do they not heat the earth as much as when they are direct?

USING AN ENCYCLOPEDIA

On page 47 you saw pictures of two interesting explorers, Peary and Amundsen. To find out more about these men, look them up in an encyclopedia. An encyclopedia is usually a set of books. It contains many facts that people often want to know. The words are in the order of the alphabet.

Each book of the set shows on the back of it what letters or words are included in that book. Different encyclopedias have different ways of showing this. **Amundsen** is usually in the first book of an encyclopedia.

Some encyclopedias tell how the words in them are pronounced. Find out in an encyclopedia or a dictionary how **Peary** and **Amundsen** are pronounced.

LEARNING FROM PICTURES

You can learn a great many interesting facts from the pictures in this book.

After you have read all that you can find about Peary and Amundsen in the encyclopedia, look again at the pictures on page 47. Then see if you can answer the following questions:

1. To what country did each explorer belong? What flag do you see on Peary's ship?
2. What do we mean by "discovering" the poles? Did people know nothing about the North Pole before 1909, or about the South Pole before 1911? Why had no one been there before? Why was it worth so much effort to reach the poles?
3. How did these men have to prepare for their journeys? What sort of clothes did they wear? Did either man go alone? Why or why not?
4. How did Peary and Amundsen get to the poles? Why was it dangerous to go? How were Peary's sleds drawn? What kind of ship did Amundsen have? How is he traveling in the picture? Is this the way he reached the South Pole?

Write a paragraph about each of these famous explorers. Put in the main facts about their discovery of the North and South Poles.

FINDING DIRECTIONS ON A MAP

1. On a map or globe the North Pole always shows which way is **north.** Find **north** on the map on page 46.
2. If a map does not show the North Pole, the part of the map which is nearest the North Pole is **north** on that map. Find **north** on the map on page 20. If you are not sure, compare this map with the one on page 46, or with a globe.
3. When you have found **north** on a map, it is then easy to find the other directions. **South** is exactly the opposite of **north**—toward the South Pole. Find **south** on the map on page 46.

East is on the right-hand side as we look toward the North Pole. Find **east** on the map on page 46. **West** is exactly the opposite of east. Find **west** on the same map.

4. Maps often have a little sign on them to help us find the directions easily. Find this little sign at the top of the map on pages 24–25. Notice the arrow marked **N. N** stands for **north,** and the arrow points toward the North Pole.

Find the line marked **E,** which points east. Find the **S** line, which points south, and the **W** line, which points west.

Now find **north, south, east,** and **west** on the map on page 37. If you are not sure, compare this map with the one on page 46, or with a globe.

USING YOUR GLOBE

Put the North Pole and South Pole on your globe. Write **Equator** on the line you drew around your globe.

Show where Spain, the Strait of Magellan, and the Spice Islands are on your globe. With your finger trace the route of the *Trinidad.* Then trace the route of the *Victoria* back to Spain.

WORD MEANINGS

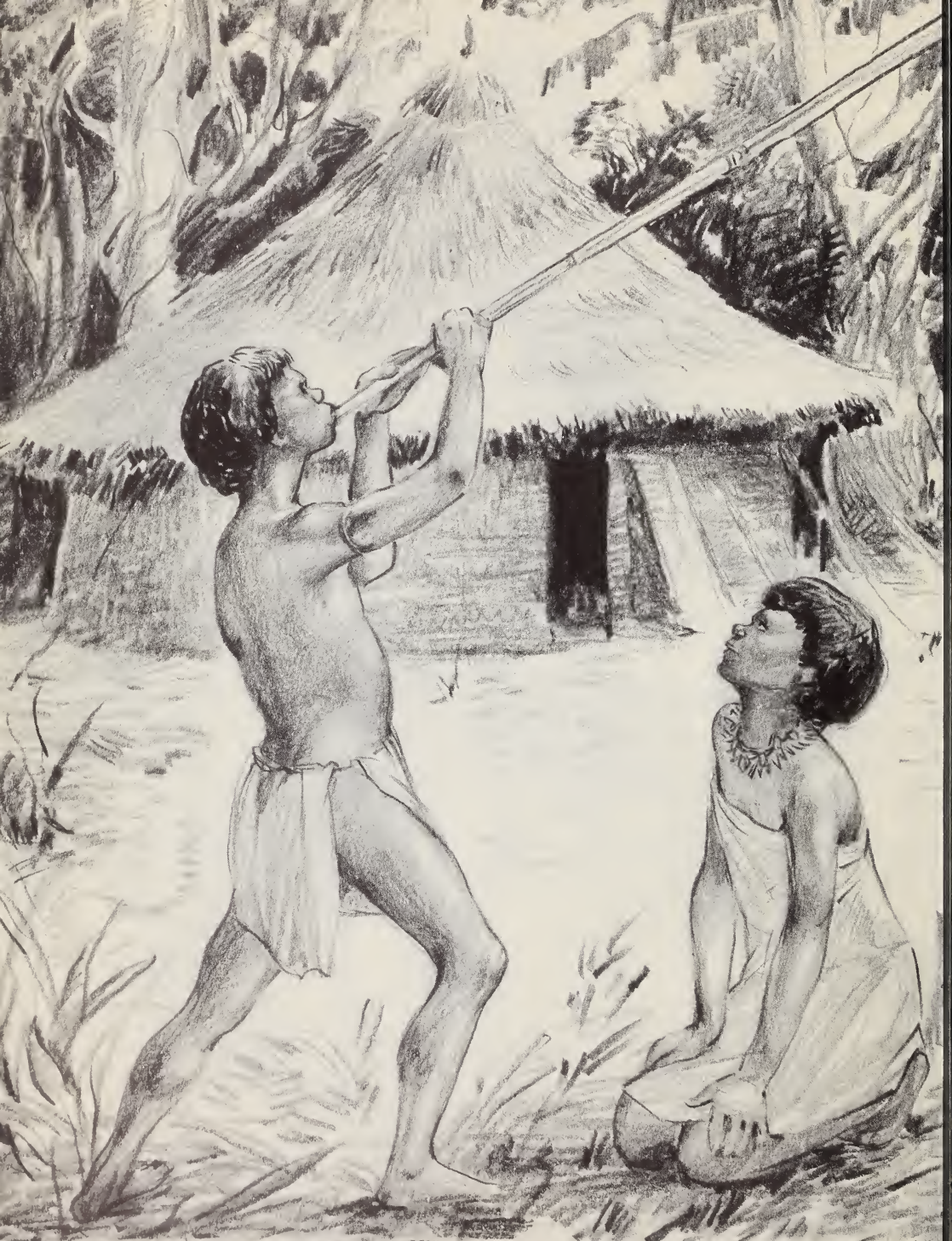
Be sure that you know the meaning of each of the words below. If you do not know a meaning, find it in your word list on pages 265–274. Write sentences using each of the words correctly. You may use two or more words in one sentence if you wish.

South Pole	axis	seaport
temperature	spice	trader
flagship	cargo	voyage
equator	vapor	explore
North Pole	scarce	nutmeg
explorer	strait	mutiny

PART TWO

Others Who Share Our World

1. Are all the people on our earth alike in some ways?
2. Do different peoples have different ways of living?
3. Which are more important: the ways in which people are alike or the ways in which they are different?
4. Why is it easier to live in some places than in others?
5. What happens to different ways of living when people get together?
6. Can we learn something worth while from every people whose way of living is different from ours?



Bogana and Wana are an Indian boy and girl who live in a thick forest near the Amazon River. They and their father and mother share this large house with several other Indian families.

Living in a Hot, Wet Region

In this part of the book there are stories about some of the people who share our world. You will find that the peoples, or groups of people, who share our world have many different ways of life. You will read about some of these different ways of living. And you will learn some of the reasons why not all peoples live in the same way.

The first story is about a boy named Bogana (bō gä′nä) and his sister Wana (wä′nä). Bogana was named for an Indian chief of his people.

Look at the picture of Bogana and Wana on page 52. They may not dress as you do, but you will find they are like you in many ways. As you read, look for the ways in which they are like you.

Wana and Bogana live on the continent of South America, near the largest river in the world. This river is called the Amazon. The Amazon River is near the equator. Find it on the maps on pages 56 and 57. Can you find the home of Wana and Bogana?

The *climate* along the Amazon River has a great deal to do with the way Bogana and Wana live. Do you know what we mean by *climate?*

When a place has hot weather most of the time, we say it is in a hot climate. When a place has cool weather most of the time, we say it is in a cool climate. Do you think Bogana and Wana live in a hot climate? Why?

When a place has a great deal of rain, we say it is in a wet climate. When it does not rain very often, we say that the climate is dry.

We use the word *climate* when we want to tell how warm and how wet the weather usually is. As you read the story of Bogana and Wana, you will see that they live in a hot, wet climate. Be sure to notice how much the climate has to do with the way these children live.

Bogana awoke early. For a long minute he lay in his *hammock,* or swinging bed, enjoying the cool of the early morning. Then he remembered.

Bogana remembered what it was that had made him go early to his hammock the night before. He had gone with a hurt in his heart and a hot, dry feeling in his throat. Anyway, Bogana remembered, he had not cried. He was glad of that.

It had happened the night before—this thing that Bogana remembered. Of course it had really begun early the day before, during the hunt. But it was while he sat with his family at the evening meal that the worst part had taken place.

What had happened at supper the night before

There had been meat stew for supper. Stew is a food made by boiling meat and vegetables together. They had not had meat for many days, and Bogana was so hungry for it that he could hardly wait. He broke off a piece of *manioc* (măn'ĭ ŏk) bread and dipped it into the pot of stew. When it was covered with the good meat gravy, he put it quickly into his mouth and ate it.

Smacking his lips over the taste of it, Bogana spoke aloud in his own language. Of course you could not understand the words he said. But his words meant, "Good! Oh my, but it's good!" He was talking about the stew.

Bogana's father looked at his son with a deep frown on his face. "It is no thanks to you that we have meat for the stew," he said. "Running home from the hunt like a coward! Deep is my shame, to have a son with no courage."

The boy hung his head.

His father went on speaking. "Today, after the hunt, we sat in the men's meeting house for our *palaver* (pȧ lăv'ẽr). They were talking about you, and laughing. They laughed because you were afraid. I could not look the men in the eye for shame."

Bogana put down his piece of manioc bread. He no longer felt hungry, even for the good meat stew. His throat felt as if it were closing up.

"The *machete* (mä chā'tā), Father," said Bogana. "The long, sharp knife that you will get from the trader. When I can have a machete of my own to carry, I shall not be afraid of anything."

Bogana's punishment for being a coward

But Father's frown grew deeper. "There will be no machete for you," he roared. "Machetes are not for cowards. Only one who has proved his courage should have that long, sharp knife."

Bogana could bear no more. Without so much as another taste of the good food, he went to his hammock and crawled into it. It was too bad for him to miss the storytelling among all the families after supper. The success of the hunt and the fine evening meal had made everyone ready for storytelling.

But Bogana could not face the others that night. He stayed in his hammock while they gathered around the fire. He

"There will be no machete for you," roared Father. "Long, sharp knives are not for cowards."

began to think about this thing that had happened to him.

Always he had meant to be strong and brave like his father. But the men had laughed at him in their meeting house. The boys would laugh at him too. And his father was ashamed of him. Besides all that, he was to have no machete.

Ever since he could remember, Bogana had seen the men and older boys use this huge knife in the forest. He had watched them cut down small trees, slice open coconuts, or make a path through the thick forest. He lived for the day when he too might own a machete.

Can you guess who ate Bogana's Brazil nuts?

This year Bogana had worked hard to help gather *Brazil nuts* in the forest. A great pile of the nuts now lay ready to be loaded into the *dugout*. A dugout is a canoe made by hollowing out a log. The nuts would be taken down the river to the trader.

Father had told Bogana what would happen to the nuts after that. He said the trader would take them still farther down the river to where its waters flowed into the sea. There other traders would load the nuts onto big ships. These big ships would carry the nuts to a country called the United States, in North America.

The children and grown people in the United States of America would buy Bogana's Brazil nuts and eat them. They liked to eat them raw, as Bogana and Wana did. But they liked them best in a queer food that the trader called

On this globe you can find the Amazon River, near which Wana and Bogana live. Is the Amazon north or south of the equator? Is it near the equator or far from it? On what continent is the Amazon? In what direction does it flow? Into what ocean does it flow? Find several other large rivers on this map. On what continent is each river?

"candy." They used the *cacao* (*kȧ* kä′ō) beans, which the Indians also sold to the trader, to make chocolate candy. And they liked to eat the roasted Brazil nuts after they had been dipped in chocolate candy.

But Bogana understood very little of all this. He had never seen the ocean as it was too far away. Candy meant nothing to him, for he had never tasted any.

What Bogana's father received for the nuts

What really interested Bogana was the pile of goods with which the trader paid his father for the Brazil nuts. Among these trade goods were beads, cotton cloth, salt, and the big machetes.

Bogana's sister Wana was always glad to get a piece of the brightly colored cloth. It was so much softer and cooler than the cloth her mother made from the bark of the *palm* tree. And the gay colors were so beautiful! Palms are tall trees with a crown of large leaves at the top.

But best of all, thought Bogana, were the machetes, with their long blades of sharp steel. The Indian who had no machete had to get along the best he could with a stone knife.

Why Bogana had wanted to gather the Brazil nuts

This year Bogana had hardly been able to wait for the Brazil nuts to fall. Father had told him to stay away from the trees until the big round balls were all on the ground. Each of these balls holds from ten to thirty Brazil nuts. The boy might have been badly hurt if one of the heavy balls had fallen on his head.

When the nuts were down at last, Bogana had worked very hard at gathering them. He had felt sure he would have a machete of his own if there were plenty of nuts to trade.

But now he no longer hoped for a machete. The things Father had said at the supper table were true. Bogana had run away from the hunt because he was afraid. He had been a coward.

Making weapons to take on the hunt

Perhaps you would like to know what happened at the hunt. For days the men had planned for the hunt. Bogana had helped to make poison *darts*. With these the hunters hoped to kill a monkey, a *sloth* (slōth), or even a *peccary* (pĕk'ȧ rĭ). A sloth is a slow-moving animal that lives in trees. A peccary looks something like a pig.

Father had made Bogana a new *blowgun*. He had carefully chosen the long, hollow stem of a plant. It was straight and smooth, and longer than the tallest Indian brave. Bogana was proud of his new weapon.

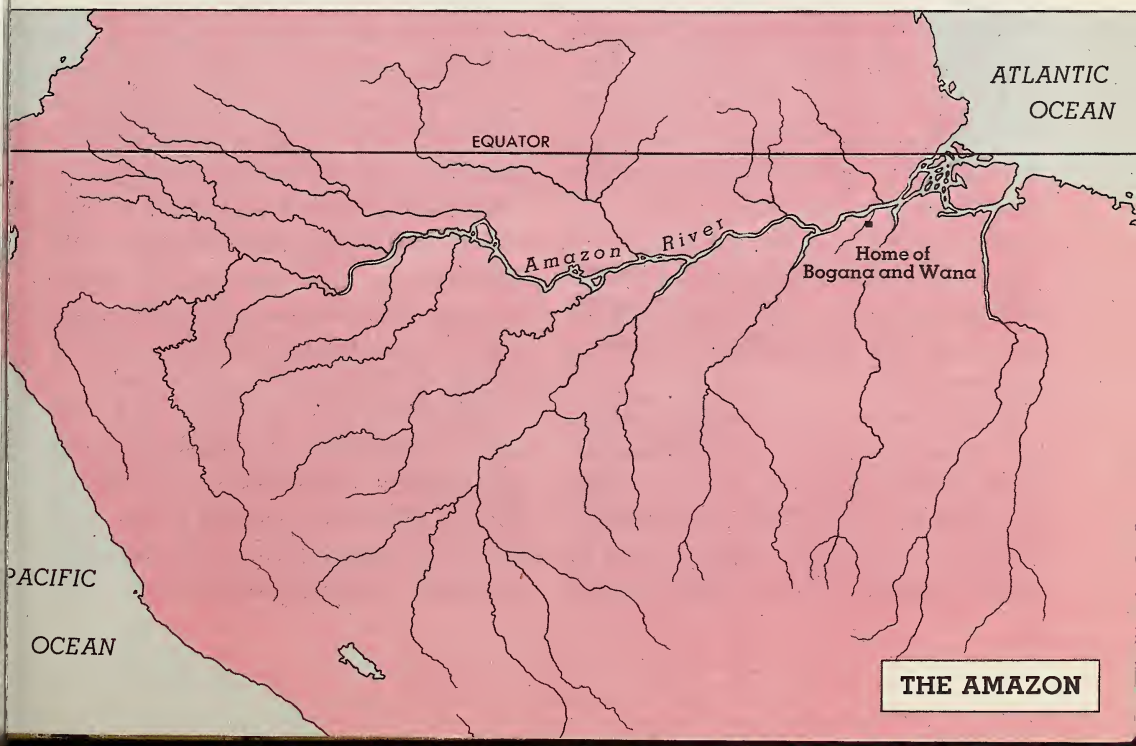
"Try it," Father said when the blowgun was finished.

The boy fitted a dart into one end of the new blowgun. A careful aim at a bright flower high on a tall tree, a quick, strong puff of breath, and zing! Bogana's dart cut the air, and the red flower fell slowly to the ground.

"Good!" said Father, smiling at his son. "If you shoot that well on the hunt, we shall have meat to eat, and we shall have plenty of it."

The boy's eyes lighted with eager surprise. "Will I have a chance to shoot with the men, Father?"

Here is a large map showing the part of South America that contains the Amazon River. On this map you can see many of the smaller rivers that flow into the Amazon. Notice how close to the Pacific Ocean one of these smaller rivers flows. See how close to the Atlantic the home of Bogana and Wana is. Notice that several of the smaller rivers flow across the equator.



Just as Bogana took aim he looked up. On a branch above him lay the long yellow body of a jaguar.

"Yes," Father answered, "I think you are ready now to go on the hunt."

Looking forward to going on the hunt

Before going to bed that night Bogana placed his blowgun on a log that helped to hold up the roof. There it would be in less danger from the ants. They might make a single meal of it during the night if he left it on the floor.

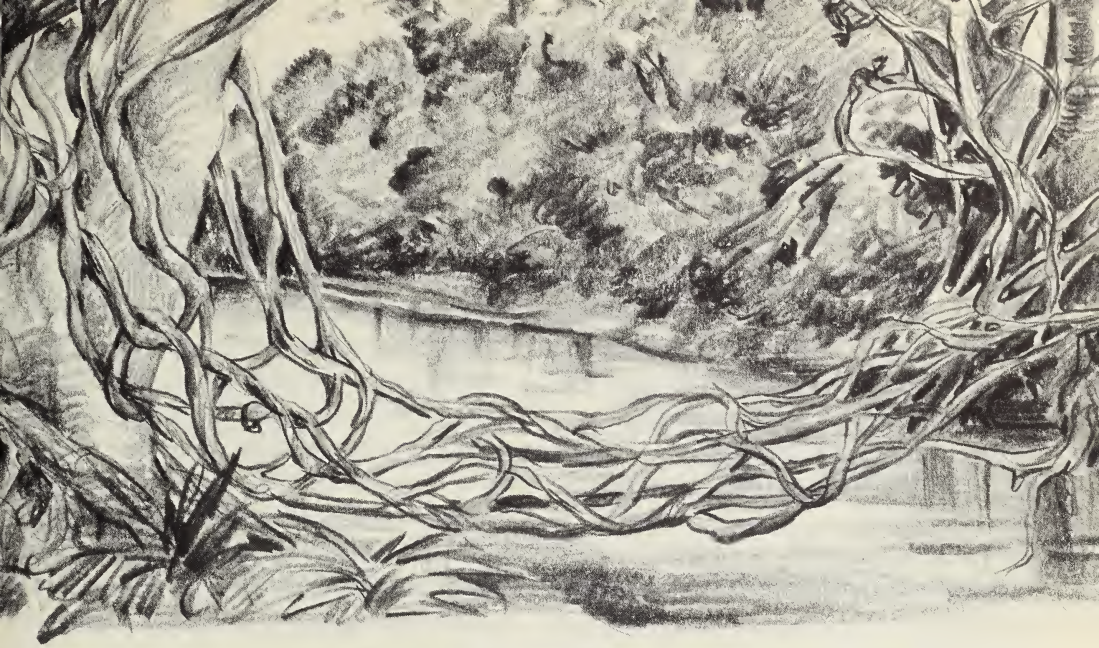
The ants ate anything made of wood. That is why Bogana's home had a floor of hard-packed earth. That is also why his bed was a hammock and did not rest on posts on the floor.

So Bogana saw to it that his blowgun was as safe from the ants as possible. Then he fell asleep and dreamed of the coming hunt. Even the great clouds of mosquitoes and other insects failed to wake the sleeping boy. Bogana was so used to mosquitoes that he did not notice them as much as people in our country do.

Setting out together through the thick forest

Early the next morning Bogana and his father started out with the men and older boys. They walked in single file through the thick forest. This forest surrounded the clear space where their houses stood. They could not walk in groups, or even two by two. The path among the thick bushes, vines, and trees was too narrow for that. It was almost impossible to keep a path open through the forest, because bushes and vines grew up so quickly.

Quietly the men and boys made their way through the thick growth toward the great river. The woods were wet from rain. So the hunters got a shower bath every time they brushed against a bush or a branch. But they didn't mind. The



Its green eyes glowed like fire. He dropped his blowgun and started back across the vine bridge.

cool water felt good in this steaming hot weather, and they wore almost no clothes. The pieces of cloth that were wrapped around their bodies were soon dried by the heat.

The hunters kept looking for game as they moved toward the river. But not even a *parrot* showed itself. A parrot is a bright bird with a curved bill. Only the gay-colored butterflies moved in and out. Their bright blues and reds and yellows flashed against the green leaves.

Bogana's chance to shoot a monkey

The hunters came to a small stream that flowed into the Amazon River. They crossed the stream on a bridge made of huge vines. Bogana was the last one to cross the bridge. As he set foot on the other side, his father saw several monkeys in a tree just ahead. The man beside Father saw them too. He quickly lifted his blowgun to his lips.

"Wait!" Father said in a low voice. "My son will shoot." He looked at Bogana, and the boy saw him point with his chin toward the monkeys. These Indians usually point with their chins instead of their hands.

With great pride Bogana raised his blowgun to his lips. He never knew just what caused him to look up at that moment. Maybe it was the sound of a small branch breaking above his head. It was something, anyway. Just as Bogana aimed his dart, he looked up.

Running away from a jaguar

On a branch of the tree above him lay the long yellow body of a *jaguar* (jăg′wär). Its green eyes glowed like fire. Bogana could almost feel its hot breath. With a

low cry the boy dropped his blowgun and started to run back the way he had come. The vine bridge did not make a good path. When he was part way across, he fell head first into the stream below.

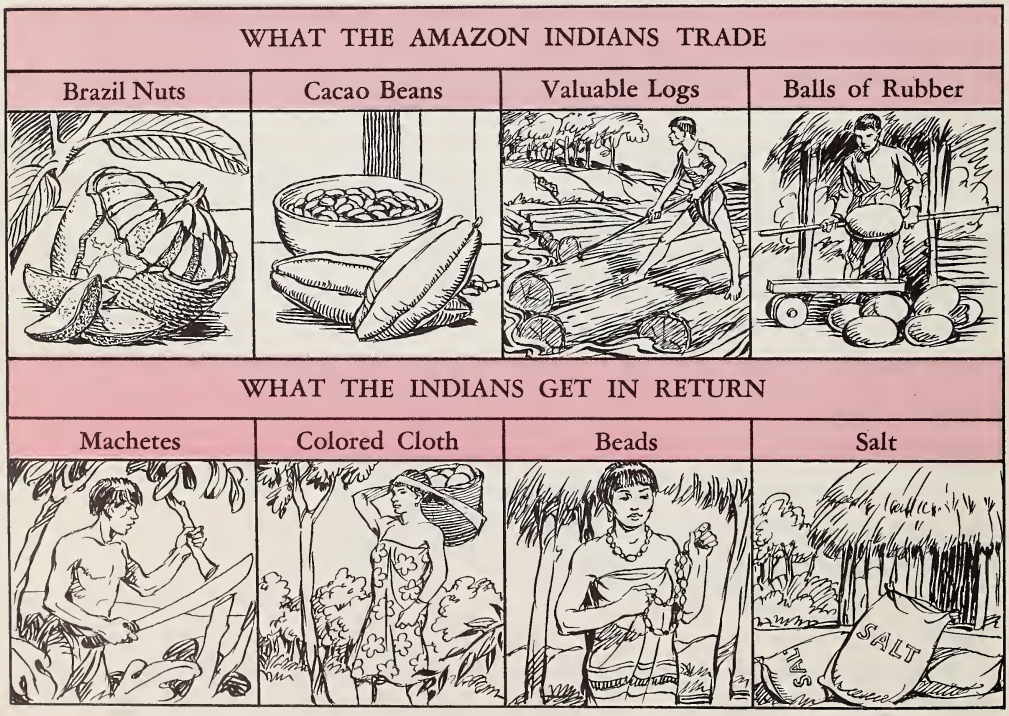
Boys along the Amazon learn to swim almost as soon as they can walk. Bogana was not hurt by his fall into the warm stream. But it took a little time for him to swim to the bank and climb up.

He made his way back across the vine bridge. This time he walked slowly. He balanced himself carefully as the bridge began to swing.

He half expected to see Father and the others standing around the dead body of the jaguar. No doubt his running had frightened the monkeys away. But perhaps the hunters would forget about that if they got the Old Gentleman. Bogana did not say the word for "jaguar," even to himself. He and his people always said "the Old Gentleman." They thought that speaking the jaguar's real name would bring them bad luck.

When Bogana got back to the spot where he had seen the jaguar, the beast was nowhere in sight. And neither were the hunters. It takes only a minute to become lost from sight in the thick forest. Even Bogana's new blowgun was not to be found.

The boy looked about him carefully. You or I would have seen no sign of the way the hunters had gone. But the keen eyes of the Indian boy had been trained to the ways of the forest. Such signs as a broken branch and a footprint on the



leaves showed him the way the hunters had taken. He knew which way to go.

Deciding to turn back

Bogana could have followed them. He knew that his father expected him to follow. But he didn't want to. He didn't like being alone in this thick, tangled forest. He kept thinking of the big green eyes of the Old Gentleman. He wondered which way the beast had gone. Besides, he no longer had his blowgun with which to protect himself.

Slowly Bogana turned and crossed the vine bridge again. On dragging feet he made his way back through the forest to his home.

His sister Wana was working with the women in the garden. She was pulling up manioc plants so that their roots could be made into bread. Mother had been digging up the soil with a sharp-pointed stick. As Wana pulled a manioc plant, Mother broke off a branch and stuck it into the newly turned soil. This branch would grow and make another manioc plant to take the place of one that Wana had pulled.

"What are you doing here?" cried Wana as her brother came into view. "Where are the hunters?"

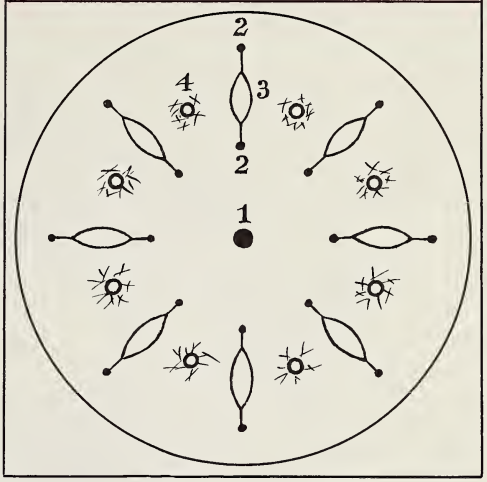
Bogana did not answer. He kicked the dirt with his toes as he walked.

"Well," teased Wana, "if you cannot keep up with the hunt, come and help in the garden."

"That is women's work!" Bogana spoke crossly. He kept on toward the house.

"Hush, children!" Mother said in her soft Indian voice. "It is time to stop

FLOOR PLAN OF BOGANA'S HOME



This drawing shows: (1) the center pole; (2) the two circles of poles that hold up the roof; (3) the hammocks hung between the poles; (4) the family fires with a pepper pot on each fire.

work, anyway. The sun is high in the sky. It is too hot to stay outside any longer."

So Bogana and Wana went to their hammocks, as all the others did. Where they live, the sun is almost directly overhead at noon. That is why they stay in the house during the middle of the day and sleep away the hottest hours. They do not get up again until late afternoon. Then the sun's slanting rays are not so hot. While Bogana and Wana were sleeping, heavy rains fell, as they did almost every day in that hot, wet climate.

The return of the hunters with meat for the stew

It was some time after the rains that the hunters returned. Everybody went out to meet them. There was much rejoicing at the load of game that the hunters

brought. They had two monkeys, three parrots, and a sloth. And sure enough, they had a peccary!

There would be meat enough for tonight and for many days to come. Bogana's mother put some meat into the clay pot that stood over the fire. She put several kinds of meat into one pot. She had no other way of keeping it. She had never even heard of ice.

In that hot part of the world food will spoil in just a few hours. So the Indians have to cook their meat as soon as it is killed. They keep what is left over in the cooking pot on the fire. There it boils and boils, night and day. Any bread or vegetables that are left over are thrown into the pot. A great deal of pepper is put in to season the stew. The Indians call this pot the *pepper pot*. It is always ready with its good-tasting stew. But they do not always have fresh meat to put into it.

They have only one other way of keeping food from spoiling. Sometimes they *parch,* or roast, some of the manioc meal on hot stones. Since this dry brown meal will keep for days, they carry it with them on hunts. It is also put into stew to make the gravy thick. Bogana's mother sprinkled some of this meal into the pepper pot after she had put in the meat.

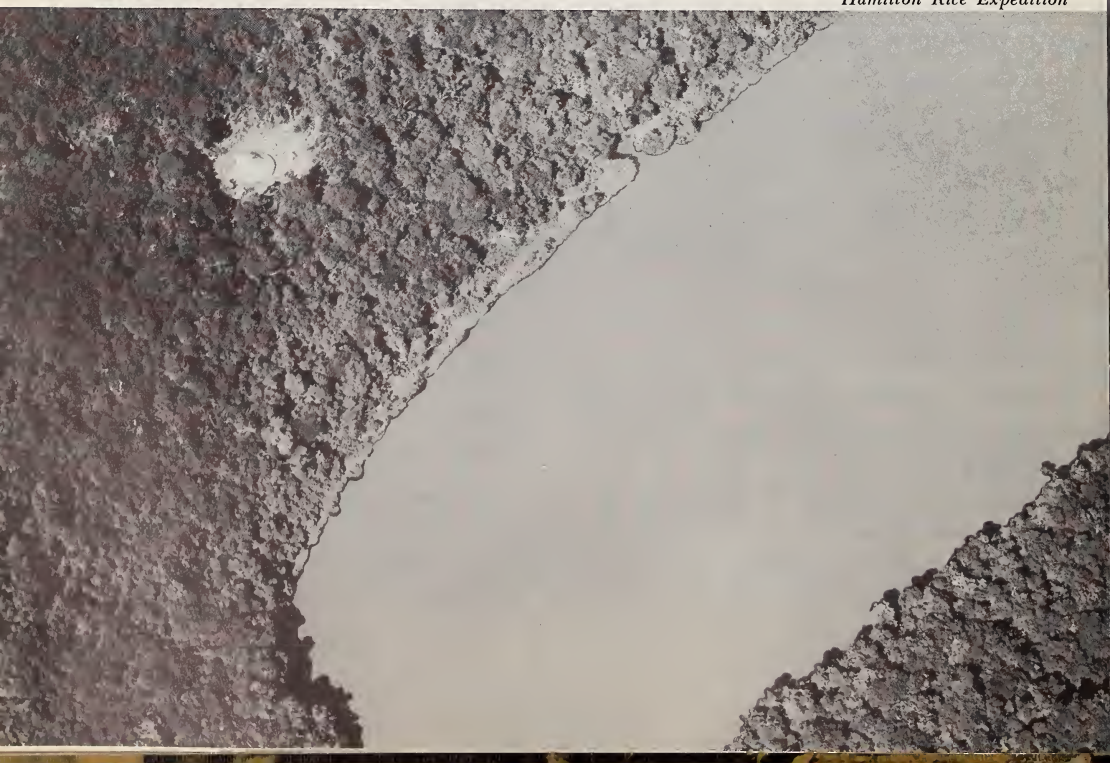
The family's feast and Bogana's shame

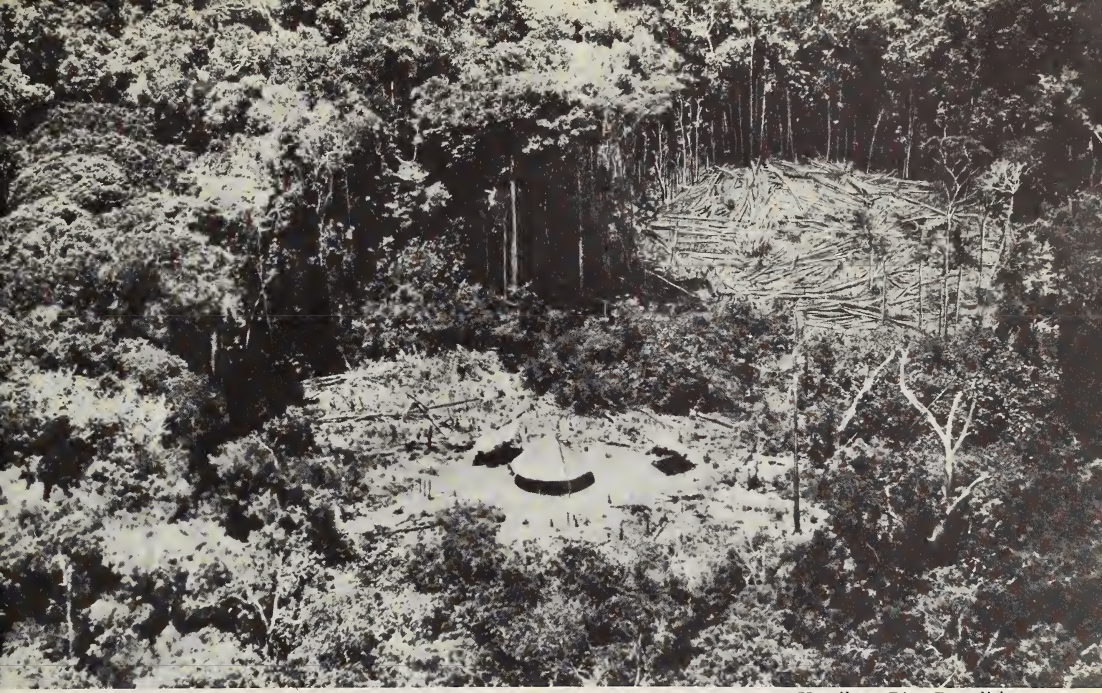
The stew smelled so good that Bogana could hardly wait for it to finish cooking. He watched Wana as she got supper ready.

First she spread a huge green leaf on the floor. This would serve as table and tablecloth, all in one. Next she put a big

This airplane picture shows how Bogana's home is hidden from a stream flowing into the Amazon.

Hamilton Rice Expedition





Hamilton Rice Expedition

Here is a closer airplane view of an Amazon Indian home. A space has been cleared for a garden.

bunch of bananas on the green leaf. Beside it she placed some baked sweet potatoes that she had raked out of the hot coals. Mother lifted the pepper pot from the fire. Then Wana brought the cakes of manioc bread that had been baked on a hot stone.

What a feast! The family gathered round, sitting on the floor with legs crossed. Each one took his cake of manioc bread and began to dip pieces of it in the stew. When the gravy was gone, they picked up the meat with their fingers and ate it.

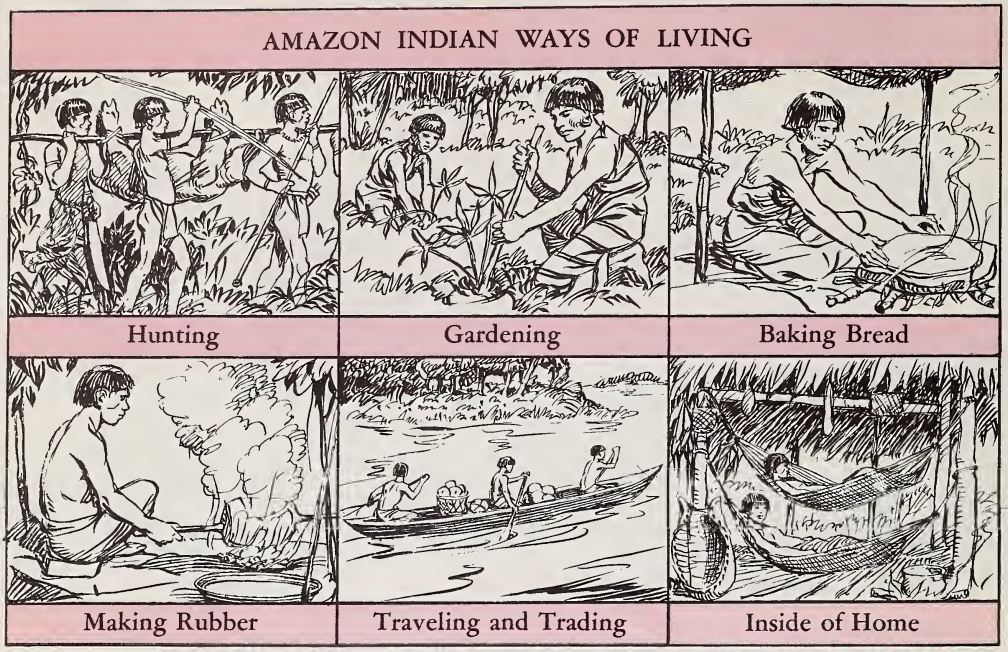
It was then that Bogana had smacked his lips and said how good the stew was. It was then that Father's hard words had killed Bogana's hunger and made him go to his hammock in shame.

The others had sat with the group for the storytelling. But Bogana had stayed in his hammock and thought it all over. He would have no shining machete when the Brazil nuts were sold. Even his new blowgun was gone. And Father was ashamed of him. At this thought his hot, dry throat had ached more than ever. It had been hard work to keep back the tears as he lay there in his hammock.

A canoe trip to the trader's village

"Get up, Bogana!" called Father. "Today we visit the trader. We must leave before the sun is high."

Bogana quickly sprang from his hammock. He took a few mouthfuls of food from the pepper pot. Then he followed his father. They made their way to the banks of the stream. Others were already loading Brazil nuts into the huge dugout. Soon they all got into the canoe.



Bogana sat quietly in the bottom of the boat. The men began to *paddle* the canoe down the stream that would take them into the Amazon. It was easy to paddle *downstream*. This was the trip that Bogana had waited for all year. But it gave him little joy. He kept thinking about the machete.

On and on they went, into the great river and down its broad, muddy waters. At last they came to a small village. Here the houses were a little different from those of Bogana's family and their friends. These stood high up on poles so they would be above the waters of the Amazon when it was flooded.

It rains often along the Amazon all through the year, even during what is called the *dry season*. But during the *rainy season* it rains more than ever. At that time the streams that flow into the Amazon swell with the heavy rains. The great river rises until it floods its banks. If the houses near the river were not built on poles, they too would be flooded by the muddy waters of the Amazon.

Getting trade goods in return for the nuts

Everything looked strange and exciting to Bogana. He watched his father and the other men trade their nuts for the wonderful goods the trader spread before them.

The boy was pleased when Father chose a piece of yellow cloth with big red flowers on it. This, he knew, was for Wana. But when the trader took out the shining machetes, Bogana could look no longer. He ran and hid in the bottom of the dugout. Then he really did cry.

After their noon rest the men returned

to the canoe, bringing their trade goods. These were loaded into the dugout, and a fine pile they made in the middle of it. Bogana saw that the red and yellow cloth for Wana was right on top of the pile. How happy she would be to get it! And how handsome she would look with the cloth tied around her waist on special feast days!

The men bent to their paddles. It was harder work to paddle the boat toward home, for they were going *upstream* now. Coming down they had paddled with the current as the river flowed toward the sea. Then the boat had moved swiftly and easily. Now it was moving more slowly.

What happened to Wana's cloth

They had paddled for some time when they saw a great *crocodile*. He was asleep on a mudbank near the river's edge. They almost missed seeing him in the dim light of the deeply shaded river. They had gone some distance past the spot where the big animal lay when one of the men saw him.

"Look!" he cried in a low voice, pointing with his chin toward the river bank. "What a huge crocodile!"

"Where?" asked another.

The crocodile was so nearly the color of the mud that the others could not see him at first. The Indian lifted his paddle to point out the ugly creature more clearly. As he did this, the paddle struck the pile of trade goods. It knocked Wana's gay, colored cloth into the water. Quick hands grabbed for it, but it floated out of reach. Down the stream it drifted, toward the crocodile.

"Too bad," said the men. They pulled on their paddles and sent the canoe more swiftly up the stream. None of them wanted to get any closer to that crocodile.

Bogana's race with the crocodile

A flash of brown cut the air as Bogana went over the side of the canoe. Before the men knew what had happened, he was swimming swiftly toward the red and yellow cloth. As he swam, his sharp eyes were fixed on the sleeping crocodile.

Bogana reached the floating cloth and seized it in his teeth. As he turned back toward the canoe, he saw the crocodile slip off the mudbank into the stream. Bogana knew that he must swim upstream now. He didn't dare look back to see how fast the crocodile was gaining on him. His brown arms cut the water in

A sloth moves backwards and in this position.

New York Zoological Society

Father reached out and dragged the tired boy into the canoe. The hungry crocodile was close by.

long, clean strokes. He swam with all his might.

But the cloth that he held in his teeth opened out and got in his way. It tangled with his arms. He was fighting to get clear of it as the canoe shot along beside him. Father's strong hands reached out and dragged the tired boy into the canoe. In spite of the heat Bogana shivered when he saw the hungry crocodile close by.

Nobody said anything as the boy folded the pretty cloth and laid it out to dry. "Wana will not be disappointed, after all," he thought happily. Bogana knew what it was like to be disappointed.

Bogana's reward for proving his courage

After supper that night Bogana sat with his family around their fire. Father was dividing the trade goods. Bogana listened as Father explained to Wana why her beautiful bright cloth had been wet. There was pride in Father's voice as he told the story. As Bogana listened, he lost the hurt that had been in his heart since the night before. In its place came a wonderful feeling of delight.

And there was still more happiness to come. You can imagine Bogana's surprise when Father took up a new machete and said, "This is for my son. Now that he has proved himself brave enough to carry a machete, he will not be afraid again, I know."

Bogana felt the edge of the keen blade. His strong white teeth flashed in a broad smile. "Even if I should be afraid, Father," he answered, "I will face the danger. I will not run away."

WHY DOES BOGANA LIVE AS HE DOES?

As you read the story of Bogana and his family, you must have wondered about their ways of living. There are good reasons for all of them. How many of these questions can you answer?

1. Why do Bogana's people build such rough-looking houses?
2. Why do they wear so few clothes?
3. Does Bogana have any other foods besides those mentioned in the story?
4. Do Bogana's people have anything to trade besides Brazil nuts?
5. Why do they not have more modern ways of living?
6. What causes the thick forest that so greatly affects their ways of living?
7. Are there other places where people live in much the same way as Bogana's family does?

As you read on, you will find the answers to these questions.

Why Bogana's home looks like a camp house

Look again at the pictures on pages 52 and 55. Have you noticed how much the Amazon forest homes look like the houses in a summer camp? Perhaps you have wondered why these people do not build houses of lumber, or brick, or stone.

Bogana's home is built like a camp house because that is what it is. These Indians never stay in one place for a long time. It would be foolish for them to spend much time building a house that they would soon leave. They move often because they need new places for their gardens and because ants eat the wood of their houses. Are their floors wooden?

Their little gardens supply a large part of their food. Crops do not grow well in the same place year after year unless plant food is put into the soil. This takes the place of the food used by the vegetables.

The Amazon Indians do not know much about such careful farming. They have no farm tools, except for sharp-pointed sticks, and no way of making any. They do not need to put plant food back into the soil. It is easier to clear a space for a new garden. So few people live in this great forest that there is plenty of land for all. Everyone can have a new piece any time he wants it.

Then, too, the houses do not usually last much longer than the gardens. Often they do not last as long. The ants get into the trees and branches from which a house is made and eat the inside of them. When the Indians see that the ants are eating the wood, they soon move to a new spot and build another house.

Why these Indians do not use lumber

These Indians have no brick or stone. They do have plenty of big trees. But they have no tools or machinery for cutting the trees into lumber.

The Amazon River and the streams that flow into it are the only roads through the forest. The Indians sometimes cut down big trees and float them down the rivers to the traders. But they cannot make use of the big trees themselves. They have no animals and no machines to help them do such heavy work. They have no way of carrying loads except on

their own backs or by floating them down the rivers.

So these people cannot make houses of heavy materials or of anything that calls for machinery. The simple camp house is best for them. It is quickly and easily made of small trees and vines. And there is no great loss when it is time to move on to a new spot.

They have little use for a house, anyway, except as a shelter from the heavy rains and the hot sun. A simple house with a steep *thatched* roof—a roof covered with leaves or straw—does very well.

A peccary is three feet long, while a tapir is seven feet. Below are a mother and baby tapir.

New York Zoological Society

It is never so cold that a house is needed for keeping them warm.

Why Bogana's people wear so few clothes

Bogana and his people need very few clothes because it is hot all the year round. They are really more comfortable when they wear no clothes at all, and the children often do just that.

But the Amazon Indians like to put on a bit of something to wear. They like to wear whatever they think will make them look better, just as you do. Bogana and Wana enjoy wearing a little bright cloth, a string of pretty shells, or some colored feathers.

You are just as much interested in good-looking things to wear as are Wana and Bogana. But your clothes must also protect you from the weather. They must keep you warm during the greater part of the year.

Why Bogana's people have so few different foods

The foods that Wana and her mother served the night of the hunt are the chief foods of their people. Do you remember what they were?

In these hot, wet forests there are no stores. And there are no trains or trucks to bring foods from distant parts of the earth. Each family must depend on its own garden and on hunting and fishing. A few wild fruits and nuts can be found, but they do not furnish enough food for a living.

Corn, beans, pineapples, and sugar cane are sometimes grown in gardens. But the foods on which these Indians most

depend are sweet potatoes and manioc. Manioc is most important of all. It is the only one of their foods that the ants will not eat. Ants often eat up the sweet potatoes and other crops.

What these Indians exchange for trade goods

Brazil nuts are not the only thing that the Amazon Indian has to trade. People in our country and other countries want many things that grow in the hot, wet forests.

Among the huge trees of the Amazon are some kinds that make fine furniture. One of these is the *mahogany* (mȧ hŏg′-ȧ nĭ) tree. The Indians sometimes cut these trees and float them down the river to the traders.

You have already learned that chocolate is made from the cacao bean, which grows in that hot climate.

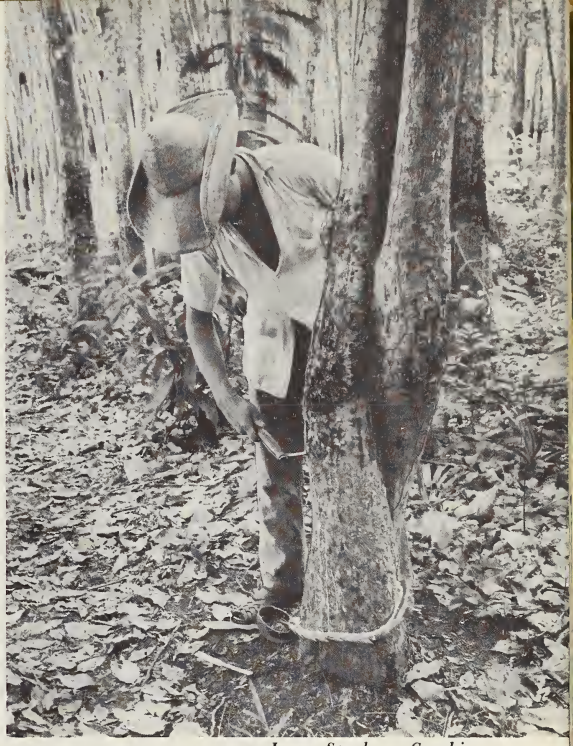
One of the most valuable things these Indians have to trade is *rubber*. They get rubber from trees that grow wild in the rain forests of the Amazon.

How rubber is obtained

The Indians cut the bark of the rubber tree. Then they put a cup under the cut to catch a sort of white milk that runs from it. This is called *latex* (lā′tĕks). Later they collect the latex and take it back to camp.

There an Indian dips a stick into the latex and holds it over a fire of palm nuts. In the heat and smoke of the fire the latex becomes thick and makes a layer of gray rubber.

The Indian dips the stick back into the latex. He holds it over the fire again, and another coat of rubber is formed. He does this over and over again until a great ball of rubber is formed on the stick. This ball of rubber is ready to be taken to the trader.



James Sawders—Combine

An Indian tapping a rubber tree in the Amazon. The latex flows into the cup on the ground.

The trader will send it across the sea. There it will be made into one of many kinds of rubber goods. Perhaps you will use some of this rubber in the garden hose, or in the tires on Father's car. You may use it in the rubbers that keep your feet dry. Can you name some other ways in which we use rubber?

Why Bogana's people do not live more as we do

Bogana's people do not need to work hard in order to get the things they need.

Screen Traveler from Gendreau

Screen Traveler from Gendreau

Both pictures show the thick undergrowth of an Amazon jungle. A rain forest has no undergrowth.

They do not need much clothing or very good houses. Hunting and fishing and a little gardening give them enough food. And they can plant their fruits and vegetables at any time of year. There is no need to store up food for the winter, since it is always summer. They could not store up food even if they wanted to. It would not keep.

If you were going to live in Bogana's forest, you would take along many things to make yourself more comfortable. You may wonder why Bogana's father does not take more Brazil nuts or rubber or logs to the trader. Then he could buy more goods.

But taking more things to the trader would mean more work for Father. The Amazon Indians do not like to work hard because of the hot climate. Any kind of work makes them hotter. People need to stay as cool as they can in order to live where it is hot all the time. It is just too hot for them to make much effort to improve things. They would rather get along from day to day as easily as possible.

They do not find out much about the many things that other people use and want. They see few people from other countries. People who live in cooler climates do not often travel among them. That is because it is hard for most people to live in such hot, wet places. Also, traveling through the forest is very difficult.

So Bogana and his family know very little about other people's ways. They live the only kind of life they know. Their way of living is suited to them and their climate.

When people from different countries get together, they take on one another's ways. In the villages where the traders

live, the Indians have taken on some of the ways of the traders. And the traders must do as the Indians do about many things in order to get along in the forest.

Rain forests and jungles

You may have wondered why the forests are so thick in the Amazon region. Trees and other plants grow much faster in this hot, wet climate than in a climate like our own.

Most plants need plenty of rain. Along the Amazon it rains several hours each day during the rainy season. Even during the dry season it often rains.

Plants also need warmth and sunshine for growth. Since the Amazon region is near the equator, it is warm there all the year round. Every day the sun rises at about six o'clock in the morning and sets at about six in the afternoon. At noon every day the sun is high in the sky and shines nearly straight down. There is no cold winter weather to kill the plants or stop them from growing.

Most of the forests are of the kind we call a *rain forest*. The trees are very tall, and the ground is nearly bare. This is because the tops of the trees come together and shut out the sunlight. It is almost dark below. Since the sunlight cannot reach the ground, there is no undergrowth.

Wherever there is a stream or a clearing in the forest, the sunlight can get through to the ground. There a thick growth of bushes, vines, and small trees springs up in a short time. This is the kind of forest that is called a *jungle*. In the jungle the Indian needs a machete for clearing a path through the thick undergrowth.

Jungles are not as common in the Amazon region as the tall rain forests. But the Indians often have to get through the jungle, as Bogana and the others did when they went hunting.

In the center of this globe you will find the Congo River. Jinga and Molalo live on this river. On what continent is it? How many times does it cross the equator? Bogana's home in the Amazon does not quite show on this map. It is just off the western side of the map near the equator. Do you see a small part of the Amazon River at the left of the globe?

ANOTHER HOT, WET RAIN FOREST

Our earth has other hot, wet rain forests besides those along the Amazon. Far to the east of the Amazon are some people who live much as Bogana and Wana do.

Bogana lives in South America, in the Western Hemisphere. Jinga lives on the continent of Africa, in the Eastern Hemisphere. They live a quarter of a globe apart.

Jinga and his sister Molalo (mō lä'lō) have never seen or heard of anyone from the Amazon River region. So they could not have learned their ways of living from Bogana's people. Yet they too live in houses like camps. They wear only a few clothes. They hunt and fish in the jungle. And they grow manioc, sweet potatoes, bananas, pineapples, and corn in their little gardens.

Why do these children from different parts of the world live in so nearly the same way? The answer is that they all live in hot, wet rain forests near the equator.

Jinga and Molalo also live on a great river. It is called the Congo. Find the Congo River on the map on page 71. See how near the equator it is.

But the boys and girls of the Congo do not look like the Amazon Indians. In fact, they are not Indians at all. They belong to the Negro peoples.

The picture above shows what Jinga and Molalo look like and where they live. The pictures on the next page show ways of living in the Congo. How are Jinga and Molalo like Bogana and Wana? How are they different?

James Sawders—Combine

James Sawders—Combine

THE CONGO

This Congo woman carries her baby on her back. The man above uses his dugout to get to his garden. These boys enjoy swimming and boating, as you do. What kind of roofs have the houses?

James Sawders—Combine

GIVING A PLAY

Act out "Bogana and the Knife." Plan the play together. Divide the story into acts and scenes, something like this:

ACT ONE

Scene 1: Outside Bogana's home. Bogana and Father prepare for the hunt.

Scene 2: The rain forest. Jaguar in tree. Bogana runs away.

Scene 3: Garden. Wana teases Bogana.

Scene 4: Inside home, after the palaver. At the evening meal Bogana is put to shame.

ACT TWO

Scene 1: At the trader's. Father trades Brazil nuts for cloth and other goods.

Scene 2: Inside home. Father tells his family about the crocodile and Bogana's brave deed. Mother and Wana ask questions. Bogana receives the machete.

Give your play for another class or for your parents. Write invitations to them. Since they will be your guests, plan to make everything pleasant for them.

Choose a committee for each different job. A committee is a small group of people who are chosen to do a certain kind of work for a larger group to which they belong. You might have one committee to meet your guests. Another may seat them and give them programs, or papers telling about the play. Another might plan the programs and get them ready on time. What other committees will you need?

OTHER WAYS TO SHARE IDEAS

Make pictures that show how people live in hot, wet lands near the equator. Let your pictures show their homes, their clothing, their food, and the things they trade with others. Write stories about your pictures. Draw maps that tell what parts of the world are shown in your pictures.

Put your pictures, stories, and maps up in your room where others may enjoy them.

A WORD PUZZLE

Write the numbers of the words below on a sheet of paper, one under the other. After the number of each word, write the letter of the meaning which matches that word. Do not write in this book.

1. rain forest
2. rainy season
3. dry season
4. jungle
5. peccary
6. cacao
7. parch
8. thatched
9. mahogany
10. climate

a. The time of year when there is less rain than at other seasons
b. A valuable hardwood tree that grows along the Amazon
c. An animal which grows about three feet long and is something like a pig
d. A tall forest in which trees grow close together and the ground is almost bare
e. A thick growth of bushes, vines, and small trees
f. The kind of weather that a place has most of the time
g. A bean from which chocolate is made
h. The time of year when there is more rain than at other seasons
i. Covered with straw, grass, or leaves
j. To roast, or to bake until brown

ADDING TO YOUR GLOBE

Draw the Amazon River and the Congo River on your globe. Put a dot on the globe to stand for Bogana's home. Make another dot to stand for Jinga's home.

USING A TABLE OF CONTENTS

Find other stories about people who live on lowlands near the equator. When you are looking in a book for a certain kind of story, use the table of contents to find one more quickly. It is at the front of the book.

Below are the names of ten stories that you might find in a table of contents. Write the numbers of these stories on a sheet of paper, one under the other. Then read the name of each story. If the story might be about people who live in the Amazon or the Congo region, write "Yes" after the number. If the story could not be about people who live in one of these regions, write "No."

1. Living near the Equator
2. Where It Never Rains
3. Gathering Brazil Nuts
4. Cutting Palms in a Rain Forest
5. Lost in a Snowstorm
6. Learning to Paddle a Canoe
7. A Boy of the Hot, Wet Lands
8. Hunting with a Blowgun
9. Harvesting Wheat by Machine
10. Collecting Latex

ENJOYING PICTURES

By comparing the pictures and the stories in this chapter, you will learn more about the hot, wet lands.

Look again at the chart showing Amazon Indian ways of living on page 64. The first picture shows the Indians returning from the hunt. What three weapons do you see? How are the men carrying the big animal? Can you find a parrot?

The second picture shows an Indian woman planting manioc with a sharp-pointed stick. Read again about Amazon Indian gardening on pages 61 and 67. Why do these Indians not use plows and hoes? How can they raise vegetables without using plant food?

In the next picture on page 64 an Indian woman is baking manioc bread on a hot stone. Before the bread can be baked, the manioc roots must be ground into meal. What makes the stone hot? Is the baking done indoors or outdoors?

The fourth picture shows an Indian making rubber. What part of the work is he doing here? If you are not sure, look again at page 69. What fuel is being used? What is in the pan this side of the fire? What happens to the latex on the stick?

In the next picture on page 64 you see some Indians in a canoe. What kind of canoe is it? The Indians are carrying balls of rubber to the trader. Are they going upstream or downstream? How do you know? What will they have in the canoe when they return? If you are not sure, look at page 56 and the chart on page 60.

The last picture shows part of the inside of an Amazon Indian home. In what are the Indians sleeping? How are these swinging beds held up? Can you see the pepper pot on the fire? A basket is leaning against the post at the left. Can you tell what the roof is made of? Compare this picture with the floor plan on page 61.

Study the chart on page 60, too, by comparing it with the stories in this chapter. You will enjoy the charts more if you study each of them in this way.

INVITING SPEAKERS

Has anyone in your class ever been in a hot, wet region? Or does anyone have a parent or a friend who has been to such a place?

If so, perhaps you can invite that classmate's parent or friend to talk to you about his travels. He may have pictures or other interesting things to show you.

Be sure to thank him for his help.

Nik and Ar-luk are an Eskimo girl and boy who live on a small island north of our own continent. They are taking the harness off their dog Manilak while their father and mother build an igloo.

Near the Poles of the Earth

You have read about a family living near the equator. You are now to read about a family living in a very different climate.

People who live in the cold regions around the North Pole cannot live like the people near the equator. No one lives right at the North Pole. But the next story is about an Eskimo boy and girl whose home is not so very far from it. The boy's name is Ar-luk, and the girl's name is Nik. They live on a rather small island called King William Island. Find it on the map on page 80.

As you read about Nik and Ar-luk, you will find that they think and feel very much as you do. They think and feel very much as Wana and Bogana do, too. They love their pets. They love their families. They like to laugh and play games and have fun together. They like pretty things to wear and good things to eat. They do not like to be hungry or wet or cold any better than you do.

Yes, in many ways they are just like you, or Wana, or Bogana. Yet their lives are very different indeed. Most of the differences in their way of living are caused by the climate in which they live. As you read their story, see if you can tell how their ways of living are caused by the climate.

People near the equator would have to change their ways very much indeed to get along near the North Pole. Look for the changes that Bogana and Wana would have to make in order to live with Nik and Ar-luk. Look for the changes that Nik and Ar-luk would have to make even to visit Wana and Bogana. See if you can tell why such changes would have to be made.

On the opposite page is a picture of Ar-luk and Nik and their big dog. See how much differently they dress than Bogana and Wana do.

The Eskimo family on their way to their winter home. Nik is in front, running beside the dogs.

THE BEST DOG IN THE PACK

The team of *huskies,* or Eskimo dogs, pulled the family sled swiftly across the snow. Ar-luk and Nik, along with their father and mother, ran beside the dogs. Their grandmother and baby brother sat high on top of the sled. The sled was packed with the things the family owned. All of them were joking and laughing as they moved along with the dogs.

The short summer was over and winter had come again. Now the waters of the sea were frozen over. Everywhere the snow lay deep. It was hard enough for their sled to travel on it easily. They were on their way to build their winter home out on the ice. There they would fish and would hunt for food and animal skins.

It was late afternoon, and it was growing dark. It had, in fact, been almost dark for many hours. The winter sun rose later and set earlier every day. Today it had shown itself in the sky for only a few hours around noontime. But even after the sun had set, there was a dim light for several hours. In this gray light between sunset and dark the family traveled on toward their winter home.

Stopping the dog team to make camp for the night

Nik was pleased when at last she saw Father flick his long whip over each dog's back. The dogs knew he meant "Stop!" She was glad to make camp for the night. Grandmother was beginning to feel the cold. Nik felt cold too, in spite of her warm clothing made of *caribou* (kăr'ĭ-bo͞o) skins.

When the sled stopped, Nik was right beside Ar-luk, helping him take the harness off the dogs. They spent a long time with the big husky dog that they called Manilak.

"He worked well today, didn't he?" said Nik.

"Yes!" The boy's lips parted in a broad smile. "He did work well. He is

Next come Ar-luk, Mother, and Father. Grandmother and baby brother are riding on the sled.

a fine dog—the best in the pack. He will prove it yet."

Nik laughed happily. "He will prove it," she said. "We shall see."

The children's love for the big dog Manilak

Nik loved the big dog almost as much as Ar-luk did. Ever since Manilak was a puppy, they had liked him best of all the dogs.

Eskimo dogs do not usually show much love for their masters, although they serve them well. Yet when Manilak was only a small puppy, he would crawl close to the boy Ar-luk. Manilak would put his soft, warm nose into the boy's hand. Then Ar-luk would stroke the pup and think, "He is mine, this dog. We belong together. I will feed him well. Someday Manilak will be the best dog in the pack."

Little did Ar-luk guess the trouble that he and his dog Manilak would soon share together!

Certainly there was no better-looking husky in the team than the handsome Manilak. His hair was thick and shining He was strong and quick, always ready to pull his share of the load. But for all his strength and beauty, he was not allowed to be the *lead dog*. Ar-luk was unhappy because Manilak could not lead the pack.

Why the big Manilak was not the lead dog

Manilak had one fault. He had not yet learned to follow a sled track in the snow. Here the oceans are frozen all winter, and the snow covers land and sea with a great white blanket. There are no roads or paths or signs to guide the traveler. Only the Eskimo dog can find his way easily over the ice and snow.

It is the lead dog that finds the way for the team. He puts his nose down to the snow and follows the *trail* of the sled that passed that way last. If he loses the trail, the Eskimo must dig in the snow until he finds the marks of sled runners. Then the lead dog smells the trail again and starts on. He keeps following the smell

On this globe you can locate King William Island, where Nik and Ar-luk live. Notice how near it is to the Arctic Ocean and the North Pole. You can also find the Amazon River and the Congo River near the equator. On what continents do Wana and Molalo live? Near what continent do Ar-luk and Nik live?

of that frozen track beneath the snow. A good lead dog is the most useful thing an Eskimo can own.

Making an igloo in an hour's time

Father left Ar-luk and Nik to take care of the dog team. He started to make an *igloo,* or snow house, for the night. He looked about carefully for snow that was deep enough for his purpose. Then he took his snow knife and began to cut out great blocks of this snow. It was frozen hard enough to hold its shape.

Father placed the first row of these blocks in a ring around himself. He left a small opening for the door. Then he began cutting blocks from inside the ring. This part would be the floor of the house.

Watching him, you would have thought this work very easy. He cut and placed the big blocks so quickly that he soon had a hut with a smooth, round top. But his job was not really easy. You would soon find that out if you tried it.

Only an Eskimo knows how to choose snow that is frozen just right. Only an Eskimo knows how to build an igloo that is strong against the bitter wind. Only an Eskimo can put up a snow house in an hour's time.

As Father placed the blocks, Mother put snow over the outside of the igloo with her snow shovel. She smoothed it with her hands. They were covered with very heavy gloves that were made of skin. The surface of the snow melted at the touch of her warm gloves. Then it

turned into a thin covering of ice. Now no chill winds could get into the igloo.

The inside of the igloo

Soon the main part of the igloo was finished. Father had cut so many snow blocks from the floor that it was much lower than the snow outside. Father crawled out through the small door.

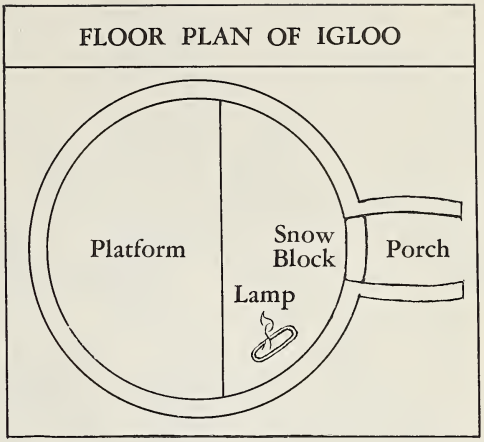
Mother, with Ar-luk's help, had dug a ditch outside leading to the door of the igloo. Father covered the ditch with a roof of snow blocks. This covered ditch was the porch of the igloo.

Mother and Nik crawled through the porch and the door to the inside. They began to make the snow house ready for the night. Mother used snow from the front of the floor to build a long, low platform across the back. This she covered with caribou skins. It would be used for either sitting or sleeping.

The seal-oil lamp and the kerosene stove

Then Mother started the oil lamp. It was both lamp and stove, for it furnished heat and light in the igloo. It was made from a long piece of *soapstone* with the center hollowed out. Soapstone is a soft kind of stone. In the hollow center Mother placed some seal *blubber,* or fat. (A *seal* is a large sea animal that provides the Eskimo with food, oil, and *sealskin.*) Mother put some cotton into the dish of blubber. She lighted the cotton with one of the matches they had brought from the *trading post,* or store.

As the cotton burned, the seal blubber melted and made oil. The oil ran into the cotton, and the seal-oil lamp burned brightly. It lighted the whole igloo and made its gleaming white walls shine with beauty.



You can see the snow block between the porch and the main part; the platform; the lamp.

Nik set an iron kettle behind the seal-oil lamp and filled it with snow. As this snow melted, it would supply their drinking water.

Father and Ar-luk fed the dogs some frozen fish and let them into the porch of the igloo. There they would be protected from the terrible cold during the night. Father fitted a block of snow over the entrance to the porch. Then he and Ar-luk crawled into the lighted, smoke-filled igloo, which was already growing warm.

By this time Mother had heated some snow over a tiny *kerosene* stove which they had bought from the trader. Kerosene is a kind of oil used for burning. Into the kettle with the melted snow she put some tea leaves. These had also come from the trading post.

Soon the steaming tea was ready. They all stood around in the heavy clothes they

wore outdoors and enjoyed cups of this warm drink. When the last drops of tea were gone, they took the tea leaves out with their fingers and ate them. Tea was very precious. It was the only warm drink they knew, and tea leaves could be had only at the trading post.

What Ar-luk's family had bought at the trading post

In the frozen North all that the people have to trade is the skins of animals. People in some parts of the world will pay high prices for such skins as *ermine* and white fox. These skins can be made into beautiful fur coats or used for trimming coats and suits.

To buy these skins, a company has put trading posts at different places in the Far North. Traders live at these stores and exchange their goods with the Eskimos. Once a year the traders ship the skins back home.

Ar-luk's family had camped at the trading post for several weeks during the short summer. There they had traded the skins of the white foxes they had caught in their traps the winter before. They had also visited with other Eskimos.

Because of this trading, the big box that Mother had brought into the igloo held a number of useful things. It was from these that she had taken the new stove and the can of kerosene to burn in it. From this box came the kettle in which she made their hot tea. There was a new fish knife, too. The big snow knife with which Father had built the igloo was also part of the new trade goods.

The family felt very lucky to begin the winter with so many useful things. Such things could not be had in that part of the world except from the trader.

Taking off their outside clothes

After the cups of hot tea were finished, they all took off their top clothes made of caribou skin. Under these they wore other suits, also made of caribou skin. The fur on these inside suits was turned next to their bodies for greater warmth. The fur on their top clothes was turned toward the outside.

These igloos were built by Eskimos on the mainland not far from King William Island. The one on the left has an extra shed for storing things. Notice the four seals placed against the igloos.

Photo by Canon J. H. Webster

The Eskimo family are eating their supper as they sit on caribou skins inside the little igloo.

Mother found that some of their top clothes were wet. She placed them carefully in a drying rack which Nik had stuck in the wall above the seal-oil lamp. These clothes would dry stiff and hard in the heat of the seal-oil lamp. But Mother, Nik, and Grandmother would scrape them soft and white again after supper.

Eating supper in the snow house

Father had brought in some frozen fish and dried caribou meat. Nik spread caribou skins on the hard snow floor. There the family sat down in a circle for their evening meal.

Nik had wanted to boil some of the caribou meat on the new little stove. But Grandmother was tired and hungry, and the baby was crying for his supper. So they had decided to eat the dried meat without cooking it, as they often did.

Father sliced the frozen fish from head to tail with his new fish knife. He bit into a slice and cut it off at his lips with the sharp Eskimo knife. Then he passed

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This Eskimo woman carries her baby in her fur-lined hood. See how warmly dressed she is.

the fish and the knife to Mother. She, in turn, bit into a slice of fish and cut it off with the knife. Then she passed the fish and the knife to the next person.

Round and round the circle went the fish and the knife, until all the fish had been eaten. The strips of caribou meat soon disappeared in the same way. Another cup of hot tea all around finished off the evening meal.

How the family spent the evening

By now the little igloo had grown quite warm from the heat of their bodies and from the lamp. The family's warm clothes and the skins on which they sat protected them from the cold snow floor. The seal-oil lamp burned brightly, and shadows danced on the shining walls.

Grandmother took some clothes from the drying rack. Then she sat on the platform and began to scrape and soften the skins of the clothing. The women were often busy at this job, but it never seemed to be finished.

The baby played on a caribou skin beside Grandmother. Father, Mother, Nik, and Ar-luk played a game of their own. One of them would hide something in the igloo, and the others would try to find it.

First Father hid one of the baby's shoes. He hid it so well that for a time no one found it. Finally Nik pulled it out of the mouth of a frozen fish that was ready to be used as food. Everybody laughed and laughed. Then the game went on, with Nik doing the hiding this time.

When they were tired of their game, Mother got out one of Ar-luk's skin shoes that needed mending. She began to sew it together again. She used a three-cornered needle made of bone. Her thread was a dried *sinew,* or strong cord, taken from the body of a caribou.

Nik went to sit on the platform beside Grandmother. She began to help with the scraping of the skins.

Looking forward to their winter home

Father and Ar-luk sat and talked of the things Eskimo men enjoy. They talked of their dogs and their plans for tomorrow's journey. They talked of the hunting and fishing they would do after they settled in their winter igloo on the ice.

"How long will it take us to get to our winter camp, Father?" asked Ar-luk.

Father filled his pipe with tobacco from the trading post. Then he answered, "Two of the left hand." He meant as many days as there are fingers on the right hand and also two on the left hand. So

Ar-luk knew that they would be seven days on the journey to their winter home.

Grandmother spoke up. "There is not enough food for so many days. We stayed at the trading post a long time."

"Grandmother has forgotten," said Father. "We return the same way that we came in the spring. We left *caches* (kăsh'ĕz) of frozen fish along the trail. We should make camp near one of them by tomorrow night." A *cache* (kăsh) is a hiding place, or what is left in a hiding place.

"Ah, yes," said Grandmother, "I remember. But things sometimes happen."

Going to bed in their igloo

Father was now pulling the baby back and forth on a bit of caribou skin. He was making believe that the skin was a sled and his hand was a dog team. The igloo was so crowded that Baby kept bumping into the others. He laughed out loud, and all the family laughed with him.

Then, in the warmth of their little snow house, they all took off their inside clothes. They hung them on the drying rack and crawled into their thick fur sleeping bags. Mother put out the seal-oil light, and soon they were all asleep.

Outside, the stars were shining clear and bright on a world that was covered with a great blanket of white. The only sounds were the low cries of the dogs and the whistle of the cold, cold wind.

Setting out again for their winter camp

No early morning sunlight woke up the family. The sun would not be up until late in the day. But they were awa early just the same.

Mother lighted the seal-oil lamp and made hot tea without getting out of her sleeping bag. Everything needed for breakfast had been placed on the platform where it could be easily reached. While they were still in their warm sleeping bags, they drank their hot tea and ate their frozen fish.

Then they quickly dressed and began to get ready for the day's journey. Finally everything had been packed carefully into the sled, covered, and tied together. Grandmother and the baby again took their places on top of the load. Father wrapped the warm furs about them. Then he waved his long dog whip and the team was off. Laughing and talking as they went, the others ran along beside the sled.

This Eskimo man does not live far from Ar-luk.

Photo by Canon J. H. Webster

When Nik and Ar-luk grew tired, they would take turns jumping up on the sled and riding with Grandmother. But they liked to run beside the dogs. They stayed close enough to Manilak to give him a friendly word now and then.

You or I would have thought it very strange to be traveling in such dim light. But Nik and Ar-luk thought nothing of it. It was early winter, and they did not expect to see much of the sun until summer came again. Then, they knew, the sun would make up for lost time by shining all day, and all night too.

Not long after they had stopped for their noon meal, something did happen, just as Grandmother had feared.

What it was that changed their plans

The sun was about to set. Nik was enjoying the way its red glow changed the snow-covered world from white to rose color.

An Eskimo cutting snow blocks for an igloo.

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Suddenly this rose color disappeared. Clouds had hidden the sun. The wind rose sharply. Without warning they found themselves fighting their way through blinding snow. It filled the air until they could hardly see one another a few feet away.

Quickly Father stopped the team. Leaving Ar-luk to take care of the dogs, he and Mother began building an igloo in a hurry. They knew that a *blizzard* was on its way. A blizzard is a heavy, blinding snowstorm. People sometimes lose their lives in a blizzard.

It was lucky for the family that Father was such a good igloo builder. He could hardly see his hands in front of him. Yet it seemed almost no time before the house was ready and the family was safely inside.

True, this igloo was smaller than the one they had used the night before. They could hardly move around in it, and they would have to crowd very close together in their sleeping bags. But they were safe from the blizzard outside. And the igloo was all the warmer because it was so little.

It was hard for them to tell how many days went by. They ate and slept and laughed and joked and told stories there in the little igloo. They had no watches or clocks, and the sun could not be seen at all during the snowstorm.

Each day Father took his snow knife and cut a hole in the wall to look at the weather. But each time he did this, the snow would fly in through the hole and scatter over the whole igloo. Father

This is how a lighted igloo looks from the outside. The light from the seal-oil lamp shows through the cracks more than through the snow blocks.

Photo by Canon J. H. Webster

would quickly fill the hole again with a handful of snow from the floor.

Why it was hard to wait any longer

Nik and Ar-luk would not have cared if the storm had gone on for many weeks, except for one thing. They loved the warmth of the little igloo. The stories and games that the family enjoyed together were always fun. But the food was almost gone.

There was not enough caribou meat for even one hungry person. So of course there was not enough for a whole family and a pack of hungry dogs. All the frozen fish, as well as the flour from the trading post, had long since disappeared. Eskimos are big eaters. It takes a great deal of food to keep them warm in such a cold climate.

Mother hung the kettle over the seal-oil lamp. There was no more kerosene for the new stove. But the seal-oil lamp would serve to boil the bit of caribou meat with a little rice. Mother shook from the bag the last of the rice they had bought at the post. When this was gone, they could only warm themselves with hot tea and hope for the storm to stop soon.

But it didn't stop. The food was all gone now, and the baby kept crying with hunger. The dogs cried too as they slept in the igloo porch. Nik and Ar-luk no longer laughed and played. Father kept cutting holes in the igloo and looking out at the weather. The others stayed in their sleeping bags. There was no need to get up, now that there was nothing to eat.

How Father planned to get food for the family

It was early one morning when Ar-luk was hardly awake that he heard his father and mother talking together.

"The wind is changing now," Father was saying. "Today we will try to move on. Before night we should reach a cache of fish that we made in the spring."

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This kind of dog team has from ten to twenty dogs and can travel at least thirty miles a day.

"And what if the *wolverines* (wo͝ol vĕr-ēnz′) have robbed the cache?" Mother, always so full of laughter, was sad and worried now. A wolverine is a long, black, furry animal that eats meat.

"Then there will be only one thing to do," said Father. "We cannot travel to the next cache without food. The weather is not yet clear enough to go out on the ice to fish or to hunt seals. If the cache has been robbed, we shall have to kill one of the dogs."

At these words from Father, Ar-luk felt cold all over, even in his warm sleeping bag. He was certainly wide awake now. He put his arm out of the bag and shook Nik, who slept beside him.

"Nik! Nik!" His voice trembled as he whispered in her ear. "If we do not find food tonight, a dog must die. Father doesn't think that Manilak will ever make a good lead dog. He is young and would be good for eating."

"Oh, no!" Nik was wide awake in an instant, and her hunger was forgotten. "Not Manilak! Manilak must not be chosen! Anyway, it has been a long time since we had a cache robbed by the wolverines. Surely it won't happen now."

A hard journey in search of food

They broke camp in a greater hurry than usual and started out in the gray dark of the morning. The weather was still far from good.

This was the hardest day's journey that the family had ever known. Nik and Ar-luk were to remember it always. In the years to come they would tell their own children about it as they sat in their warm igloos. They were all weak from hunger. Their good fur clothes did not seem to warm them. There was no talking and laughing together as they hurried through the bitter cold.

Nik and Ar-luk wanted to ride the sled. But they knew that the dogs had been without food much longer than they had. Worse even than their hunger was the fear of what might happen if they failed to find food. No, they could not ride. They must walk close beside their dog Manilak.

It was no longer necessary to run in order to keep up with the dogs. The starving team moved slowly. Nevertheless, a great deal of the trail was covered that day. The family made only one short stop for a cup of tea.

Usually an Eskimo family does not hurry on the trail. If they do not reach where they are going, it does not matter. Father will build another igloo. They carry all they own with them. So they are about as much at home on the trail as when they are camped for the winter. When they stop along the way for meals, they often spend hours in talking or playing games together.

But today the family was driven by hunger. They traveled on and on.

What they found when they reached the cache

It was still not quite dark when they saw the stones that marked one of their caches of frozen fish. The wind had blown the snow away from the cache. As they came near, they saw that the stones were no longer piled the way they had placed them. Even before they reached the cache, they could see that the wolverines had visited it. Their food was gone.

Without a word Father drove the team a little way from the cache. Then he made ready to build an igloo.

Ar-luk wanted to cry out, "Which dog, Father? Which dog?" But the words stuck in his throat. His fear was too great.

Ar-luk walked a little way from the camp. He began to dig in the snow with his heels. He struck ice. They had been traveling near the shore, and Father was now building their igloo on the frozen sea. An igloo built over the water is warmer than one built on the deeply frozen land. Do you know why?

Ar-luk's last hope of saving Manilak

"Look, Father," said Ar-luk. "The weather has cleared a little. The sky is still light, and there is a little time before dark. Let me go out on the ice and look for a seal hole."

"The wind has changed again," Father answered. "The bad weather may return any minute. I must make the igloo and get food ready for the family. We must eat."

"I can go alone, Father, while you make the igloo. Just a little way. Manilak will go with me. If we do not have luck soon, we will return and—and I will help get the food ready."

Father looked long at his son, and his

eyes were tender. How could the boy hope to catch a seal all alone? Strong men sometimes call for help when a seal must be pulled up through the ice. Besides, a seal was not likely to be found so close to shore, even early in winter.

Perhaps Father guessed that the boy wanted a little time alone with Manilak. Anyway, he was glad to give his son even a moment of pleasure now.

"All right," he said.

Father reached into the sled. He took out the *harpoon,* or spear, and a bag that held other things used in hunting seals. "Do not go far," he added as he handed the things to Ar-luk. "The weather may get worse. When I have finished here, I will come for you."

Mother watched the boy and the dog as they started across the ice. She shook her head slowly. "Poor boy! It is hard for all of us, but it is hardest for him. How can he hope to catch a seal in this short time? One must often wait for days beside a seal hole before a seal appears."

But Grandmother's old eyes glowed as she too watched the boy and the dog. "One never knows," she said.

Manilak's chance to prove his worth

Ar-luk moved quickly across the ice. He wished a little that he had brought one of the best-trained seal dogs along also. But it was true that he wanted a little time alone with Manilak. And because of his great love for this dog, he felt there was nothing Manilak could not do. If there was a seal hole anywhere within reach, he was sure the dog would find it.

He went as far out on the ice as he dared. Then he tied a long leather cord to Manilak's collar and turned the dog's head toward the wind. Manilak knew that the hunt was on.

At first he ran wildly, here and there across the ice. Then he settled down, nose close to the snow, and slowly and carefully sniffed his way along. He had not gone far before he stopped suddenly in his tracks. With nose to the snow he stood trembling.

Could it be a seal hole? Ar-luk felt as though his heart were in his throat. He dug down through the soft snow that covered the ice. Sure enough, there in the ice was the hole which a seal had made in order to get some air.

Why seals make holes

As you know, even the fish and animals of the sea must have some air to breathe. A fish is able to live on the small amount of air it gets from the water. But a seal needs more air than this.

When winter comes and the sea begins to freeze, the seal makes a hole in the thin covering of ice. He puts his nose to this hole and breathes the air. The next day he goes back to the same place and does the same thing. Because he opens the hole so often, the ice never gets very thick over that spot.

The ice all around Ar-luk's seal hole was eight or ten feet thick. But on the hole itself it was very thin. Ar-luk knew that it had not been long since a seal had used the hole for getting air.

A seal makes more than one hole, however. If he finds an enemy at one of his holes, he goes to another. That is why it

is sometimes several days before he returns to a certain hole to get some air.

Getting ready to catch a seal

Ar-luk knew this, of course. He worked very quietly. From the bag that he had with him he took out a *marker*. This was a long piece of bone, shaped something like a knitting needle. He put the marker down in the center of the seal hole. If the seal should rise in the hole now, the marker would rise also.

Ar-luk put down a piece of caribou skin to stand on, so his feet would not freeze as he waited. He took out a sharp steel *spearhead* and fastened it to the harpoon. Then he rested the harpoon on two forked sticks that he had stuck in the snow. Around one arm he tied a long cord that was fastened to the spearhead.

Then Ar-luk bent over the hole, as any Eskimo hunter would have done. His knees were straight and his head close to the ground. The Eskimo can stand this way for hours—even days. But Ar-luk knew that he could not wait long. Father would be coming for him soon. If the life of a dog—maybe Manilak's life—was to be saved, the seal must come quickly.

Every minute seemed an hour as Ar-luk waited—and waited—and waited.

How the dog Manilak saved his own life

The marker moved! As it rose in the hole, Ar-luk seized the harpoon. With all his might he drove the harpoon down into the seal hole. The steel spearhead sank deep into the body of the seal, and the cord around his arm pulled tight.

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An Eskimo raises his harpoon to strike a seal.

For a long minute it seemed that Ar-luk would go down with the seal. He held on with all his might. He tried his best to call loudly in the hope that Father would be near enough to hear. But he could not utter a sound. He could only hang on to that cord as if his very life depended on it.

It was Manilak, not Ar-luk, who guided Father across the snow. For as the boy struggled with the seal, the dog began to bark. Father had finished the igloo and was on his way to call Ar-luk when he heard Manilak's bark. He guessed what it meant.

Father ran as he had never run before. Reaching the seal hole, he grabbed the cord and helped Ar-luk pull the big seal up onto the ice. Ar-luk fell full length and lay there, too tired to move. Manilak

Reaching the seal hole, Father grabbed the cord and helped Ar-luk pull the big seal onto the ice.

came and stood over the boy. The big dog touched Ar-luk gently with his nose.

Giving thanks to the Spirit of the Waters

The boy saw his father kneel down beside the seal. Then Father made a small opening in its side and took out the liver. Ar-luk was able to pull himself up and kneel near his father. He knew that they were about to give thanks to the Spirit of the Waters for the seal. He had often seen Eskimo hunters do just what Father was doing now.

Father sliced the liver in two. Then he cut out some pieces of seal blubber and laid them on the snow beside the liver.

The man and the boy had not eaten for more than two days. It had been longer still since the dog had been fed. Yet neither man, boy, nor dog grabbed the food as it lay on the ice before them. While Father and Ar-luk were kneeling and giving thanks, Manilak sat perfectly still, as if he understood.

Then father and son ate the slices of liver and quickly put pieces of blubber into their hungry mouths. Ar-luk had often seen hunters do this. Manilak went wild with joy when a piece of blubber was thrown to him also.

The seal was tied to Manilak. As he dragged it across the snow toward the hungry family, father and son followed in happy silence.

Ar-luk spoke first. "Manilak found the seal hole very quickly, Father."

"Yes," smiled Father. "Manilak is young yet. I think he may be the best dog in the pack someday."

Here are some of the questions you might have asked as you read this story about Ar-luk and Nik. Can you answer any of them before reading further?

1. Why didn't Ar-luk and Nik think it strange that the sun rose so late and set so early?

2. Why didn't Father buy enough food at the trading post to last his family during their whole journey?

3. Why did Nik and Ar-luk live in snow houses? Did they ever have any other kind of home?

4. Are other Eskimos as fun-loving as Nik's family were?

5. Do people in other parts of the world live the way Ar-luk and Nik do?

The land of the midnight sun

You know that near the North Pole the sun's rays are never direct at noontime, as they are near the equator. At Ar-luk's home the sun is never very high in the sky, even in summer. So the sunlight does not warm the earth very much. These Eskimo children would think it quite strange to have days and nights like ours.

Right at the North Pole there are about six months in winter when the sun cannot be seen at all. During that time the days are a dim gray, and the nights are black, except for the moon and stars. Then come about six months in summer when the sun does not go down at night. It can be seen all day and all night too. Even at midnight the sun shines in the northern sky and makes the night as bright as day.

You can see why the land at or near the North Pole is called "the land of the *midnight sun.*" As one moves away from the North Pole, the nights when the midnight sun can be seen grow fewer and

The midnight sun. This picture was taken from a ship at midnight. Why is there ice in summer?

Philip Gendreau

This map shows the Arctic Circle. It is the same distance from the North Pole all the way around. At any point on this make-believe line you could see the midnight sun just one night each year. Notice that King William Island is within the Arctic Circle. That means that it is nearer the North Pole, or farther north, than the Arctic Circle. Find the large island called Greenland. Is it mostly north or south of the Arctic Circle?

fewer. When one has gone a certain distance away from the North Pole, the midnight sun can no longer be seen.

What is meant by the Arctic Circle?

On the map on this page you will see a dotted line that makes a circle around the North Pole. It is called the *Arctic Circle*. This circle shows how far one may go from the North Pole and still see the midnight sun. If one goes south of the Arctic Circle, he will not be able to see the sun at midnight. It will set for a little while every night.

Only on the Arctic Circle or north of it can the midnight sun ever be seen in the Northern Hemisphere. At any point on the Arctic Circle there is just one night a year when the sun does not set.

The midnight sun can be seen at Nik's and Ar-luk's home for about twenty-five nights each summer. Then one night it sets for just a few minutes. The next night the sun stays down a little longer. And the night after that it is down a little longer still. And so it goes. The sun stays down a little longer each night. After a while the nights are longer than the days.

By the time winter begins at Ar-luk's home, the sun is rising very late in the morning. In the middle of winter it does not rise at all. Then Nik and Ar-luk see no sunshine for about twenty-five days. After that the sun begins to show its light again for a little longer each day. Then they know that spring is on its way.

You must be sure to remember that there is no real line around the earth at the Arctic Circle. That is just a line we draw on maps and globes. It shows where in the North the midnight sun may be seen just one night during the summer. And it shows where just one winter day has no sun.

Look at the Arctic Circle again on page 94. Suppose you lived at a place through which this line goes. How many times during the year could you see the midnight sun? On how many days would the sun fail to rise?

Which of these people would see the midnight sun more often: Ar-luk, or someone in the northern part of Greenland? How do you know this?

Would a person who lived a little south of the Arctic Circle ever see the midnight sun from his home? How do you know?

What Eskimos buy at the trading post

As you were reading the story, did you wonder why Father did not buy more food at the trading post? Did you wonder why he did not buy enough to last for the whole journey to the winter camp?

Father had a number of white fox skins to trade. But he had to use them for things he could not get anywhere but at the trading post. Food is one of the few things the Eskimo can get from the cold land in which he lives. Fish, seals, caribou, and other animals furnish plenty of food, though it is sometimes hard to catch. But there are many things the family must do without unless they buy them at the trading post.

Father trades his furs at the post only once each year. All winter long he and Mother have been thinking about what they will buy. They have been choosing the things they need the most. Father buys such things as knives, kettles, stoves, harpoons, animal traps, and matches. These he could not make at all or could not make as well from bone or stone.

After buying these things, Father may get a little rice or flour or other food used by the white man. But he knows that this food is not really the kind the family needs. It will not warm them in their bitter cold climate as well as fish and caribou meat will. And the white man's food will not give them as much strength for running beside their dogs.

However, Father always buys enough tea to last until he comes again the next year. For this warm drink tastes very good indeed in such a cold climate.

What Eskimos sell at the trading post

The Eskimos of King William Island do not trade their caribou skins. They need to use them in many different ways. Besides, the white men at the trading post will give more trade goods for white fox skins. The Eskimos think that this is

This Eskimo is trading furs for food. Notice how the Eskimo and the trader are dressed.

National Film Board

strange. A white fox skin is not very useful in their own igloos. About the only use they make of it is in place of a towel, for wiping things.

Nik was surprised when she saw all the white fox skins that were hanging up at the trading post. "How can the white man use all those fox skins?" she asked. "Does he have so many things that need to be wiped?"

But Mother only shook her head. She had never heard of the beautiful, soft fur coats that are made of these skins. She thought the trader was foolish to give such useful things as knives in exchange for almost useless furs.

Nik and her family asked each other where the trader's many wonderful trade-goods came from. "Surely," they said, "the trader must have many stone caches filled with knives and kettles back in his own country."

This makes us smile. But we know as little about some other peoples in the world as Ar-luk's family knows about our country. That is why other peoples' ways of living sometimes seem strange to us. If we knew more about them, we would understand why they live as they do.

What kind of homes do Eskimos have in winter?

The igloos in which these Eskimos spend the winter are much like those that Father built along the trail. The winter igloo may be a little larger, and it may have windows that are made of sheets of ice.

Perhaps you have wondered why these Eskimos do not build larger homes. Even their largest igloo is quite small. You may have wondered also why their houses are not built of something besides snow.

The Eskimo of King William Island builds his winter home of snow because he has nothing else to use except animal skins. A skin house would be too thin for winter.

The house is small because it is easier to heat a small house than a large one. This Eskimo has no wood to burn, for no trees grow in this cold part of the earth.

American Museum of Natural History

Caribou are a kind of wild deer that live in the northern part of North America. The Eskimos depend on them for food, clothing, summer homes, and canoes.

Philip Gendreau

Frederic Lewis

These Eskimos are cooking outside their skin tent in summer. See how warmly they are dressed. On the right is an Eskimo paddling his small canoe. It has a wooden frame covered with skins.

He has no coal either. The only oil he can burn besides kerosene is the blubber of animals. Blubber is so hard to get that the Eskimo does not use any more of it than he must.

Another reason why this Eskimo builds a small house is because he moves so often. In winter Ar-luk's family move out on the ice near the best places for hunting seals. In summer they must move back to the land because the ice on the sea melts and breaks up. They want to make a trip to the trading post in summer, too. And they must hunt for the caribou that furnish meat to eat and bone and skins for many different uses.

What kind of homes do they have in summer?

The summer home of Nik and Ar-luk is not made of snow. It is made of skins. When the sun begins to show itself for a longer time each day, the snow igloo melts a little.

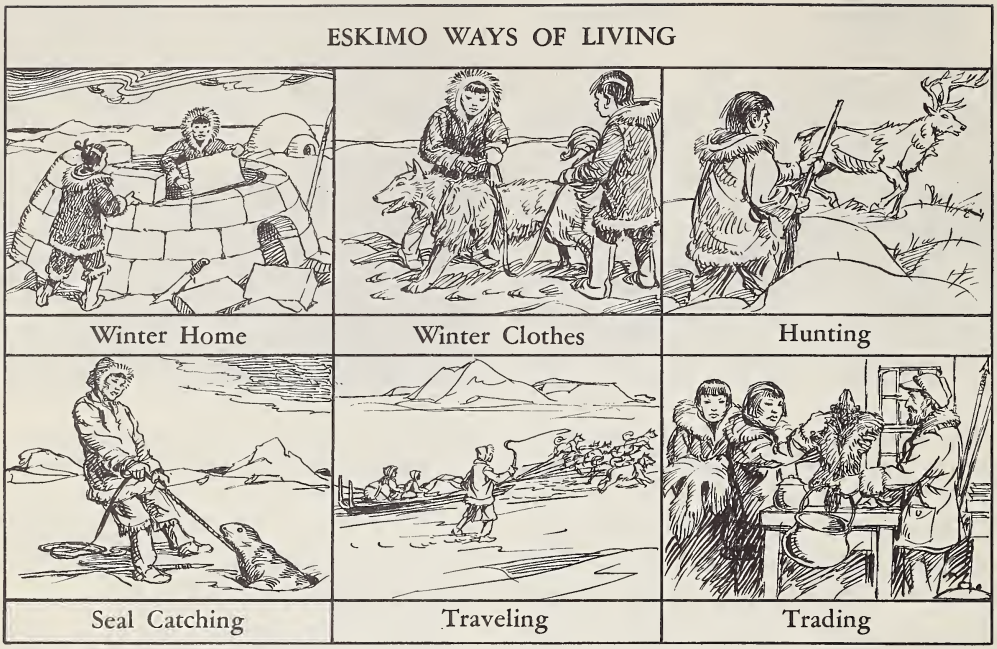
The inside of the igloo begins to drip and to wet the caribou skins on the bed and floor. Then Father takes the blocks of snow off the top of the igloo and makes a roof of skins.

When these Eskimos move to their summer home on the land, they make their whole house of skins. They stretch the skins over a frame of wood, if they can get the wood. Sometimes, though, they have to use the bones of animals for their tent poles.

The only wood Nik's family can get is what they buy and what floats to shore from the sea. They pick up every tiny piece that drifts in and save it for some use. Father's pipe has a stem made of two little pieces of wood that Ar-luk found on the seashore. Father put them together and wrapped them with caribou sinew. He made a bowl for the pipe from a small piece of soapstone.

Nik and Ar-luk also save every bit of paper, or cloth, or metal that they can find. Why?

Why do you think Eskimos have no furniture? Why is it that they do not bathe often? Why do they not grow



gardens and fruit trees? Why do they not cook their food more often?

Why the Eskimos are a happy people

There are, perhaps, no people who find it so hard to make a living as the Eskimos do. Whether they eat or go hungry depends largely on the weather. And their weather is very, very cold most of the year.

Yet they are a happy, fun-loving people. The members of an Eskimo family are always joking or playing games together. The sound of laughter may be heard in an Eskimo igloo as often as in any home on earth.

Perhaps one reason why the Eskimos feel good inside is that they are honest. They are also very kind. An Eskimo does not take things belonging to someone else unless the white man has taught him to do so. He feels too kindly toward either friend or stranger to want to take his things away from him.

No igloo ever needs a lock or key. The stone cache is always safe beside the trail unless a wolverine finds it. When the Eskimo moves from his summer home, he often leaves his skin tent and thinner clothes there. He knows that no one will take them while he is gone.

An Eskimo will share his last bit of food with anyone who is hungry. At some time or other he has been caught in a blizzard, or the fishing and hunting have been poor. So he is glad to help another who is having bad luck.

The Eskimos help us to see that people who are kind and true can be happy anywhere. But those who are unkind or dishonest cannot find real happiness.

OTHERS WHO LIVE AS AR-LUK AND NIK DO

Most people who live near the North Pole have ways of living much like those of Nik and Ar-luk. Some who live a little farther from the North Pole do not have quite so cold a climate. They have a few trees and can make more things of wood.

The map on page 101 shows the places on our earth where people live much as Ar-luk and Nik do. Notice how many Eskimos live south of the Arctic Circle.

Why the Copper Eskimos live more like white people

The Copper Eskimos live near the *mouth* of the Coppermine River. That is, they live near the place where its waters flow into the Arctic Ocean. The mouth of a river is the place where it flows into the sea or some other body of water.

The sand along the Coppermine River is mixed with *copper*. This copper is so pure that the Eskimos can just wash the sand from it and then use it. They beat the copper into spearheads and pots and other things they need. They do not have to buy copper things at the trading post. Copper is a reddish-brown metal.

Why does having their own copper help these Eskimos to buy more of the white man's goods from the trader? If you know the answer, you know one reason why Copper Eskimos live more like white people than Ar-luk's family does.

Another reason is that people from warmer places go to the Coppermine

This missionary travels 4,000 miles a year by dog team, visiting Eskimos near the Coppermine.

Photo by Canon J. H. Webster

River more often than to Ar-luk's island. That is because it is on the mainland.

Why Eskimos and traders exchange ways of living

We already know that, when people from different parts of our earth get together, they take on each other's ways.

Traders in the Far North want buildings like those they had at home. So they use lumber that has been brought on ships to make their stores and homes. But they find that buildings made of lumber are not warm enough for such a cold climate. So they often bank the outside of the houses with snow or earth. How do you think they learned to do this?

The man in charge of the trading post wears Eskimo clothes. He finds that they keep him warmer and drier than the clothes he brought from home. He finds, too, that he needs to eat more meat and fat in this cold land to keep warm.

The Eskimo gets *customs,* or ways of living, as well as goods, from the trader. It is from the trader that the Eskimo learns to drink tea, to use steel animal traps, to burn kerosene.

Many of the Eskimos have learned to believe in God. They give thanks to Him instead of to their Spirit of the Waters or their other gods. We are glad to tell other people about God. Sometimes *missionaries* go to live among the Eskimos, or other peoples, to teach them about God. But we do not try to force others to believe in God. We are willing to have them believe whatever they wish.

A missionary and a trader are the only white men that Nik and Ar-luk have ever

These policemen have learned how to live in the Far North. What Eskimo customs do they use?

Canadian Information Service

The Eskimo lands are shown in black on this map. Notice that some Eskimos live south of the Arctic Circle and others live north of it. By comparing this globe with the one on page 94 you can find King William Island. The Coppermine River is a little farther west, and it crosses the Arctic Circle. It cannot be shown on this map. Find Lapland and Alaska.

seen. The Eskimo children near the Coppermine River see white people more often.

Look at the pictures on pages 82 to 100. See if you can tell which things the Eskimos bought from the traders. Look for ways of living that white men have learned from the Eskimos.

How the Lapps compare with Ar-luk's family

Look at the map on this page. You will see that the Lapps live near the Arctic Circle but far from the home of Ar-luk and Nik. They live on the continent of Europe. The children of Lapland have never even heard of the children of King William Island. Yet they live in much the same way. Can you tell why?

There are some differences in the way the two peoples live, however. Since there are trees in Lapland, some of the people live in huts made of wood and sod. Others build snow igloos in the winter and use tents made of skins or cloth in the summer.

The Lapps do not make their dogs work as much as the Eskimos do, although they find dogs very useful. They have an animal called the *reindeer,* which pulls their sleds. It furnishes meat and skins and bones for their use, just as the caribou does for Ar-luk and Nik. The reindeer also gives the Lapps another good food, for reindeer milk is good to drink.

Most of the Lapps make their living by hunting, fishing, and trapping, as Ar-luk's father does. And they sell their furs at the trading posts.

But some of the Lapps have settled down on little farms. Their climate is not too cold to raise a few fast-growing crops during the summer. Since in Lapland the summer sun shines all day and much of the night too, plants grow very quickly. But the Lapps can raise only

James Sawders—Combine

Ways of living in Lapland. The picture at the top shows how Lapp children dress in summer. The next picture shows a summer tent. Below you see a Lapp and his reindeer, which are drawing small sleds heavily loaded with furs.

Charles Phelps Cushing

the kinds of crops that will stand their weather.

The Lapps have taken on some of the ways of other peoples. They often have schools for their children. And they buy many different kinds of goods from the traders, such as kettles and pans.

Alaska, the home of our own Eskimos

The main part of the United States is far from the North Pole. Yet our country has one large piece of land that is fairly close to this pole. It is the part of North America which is called Alaska. Find Alaska on the map on page 101.

You will see that the northern part of Alaska lies within the Arctic Circle. What do you think about the climate there? What do you think about the length of the days in summer and the length of the nights in winter? Can people all over Alaska see the midnight sun from their homes?

Although Alaska is part of our country, not many people have gone there to live. In most of Alaska the climate is cold, and traveling has been hard.

However, airplanes now make it easier to travel to Alaska. And better roads are being built in that part of our country, too. So more and more people will visit this interesting place. Some of them will make their homes there. They will not find life difficult now. Many of the foods and other things they want are brought by airplane or by truck.

The Eskimos of Alaska have kept on living there through the years. They used to depend on the caribou, just as the family of Nik and Ar-luk still do. But

they killed too many of these animals in order to sell their skins to the traders. After a while they no longer had enough caribou for their own use. They found that they could hardly live without them. The Eskimos of Alaska were almost starving to death. They needed our help.

How reindeer from Lapland kept our Eskimos from starving

People in our country knew about the Lapps and their reindeer. They saw that the moss which reindeer ate grew under the snow in Alaska, just as in Lapland. Our country bought some reindeer from the Lapps and sent them to the Eskimos in Alaska. There the reindeer could dig through the snow and find the moss, just as they did in their old homes.

But reindeer are not used to running wild in the snow like caribou. The Lapps tamed the reindeer long ago. They take care of them much as farmers take care of cows. The Eskimos of Alaska did not know how to take care of reindeer. They had never taken care of any animals except their dogs.

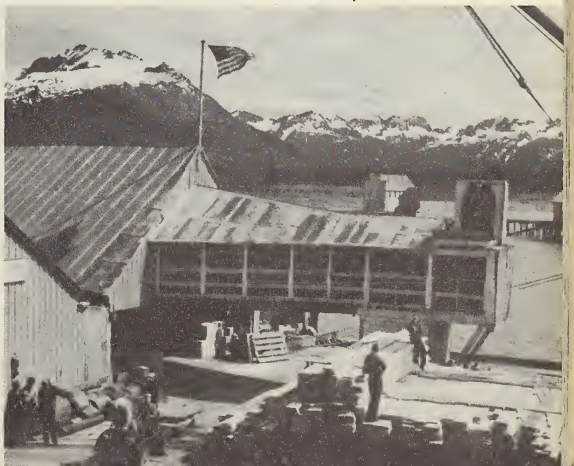
So our country hired some Lapps to go to Alaska and teach the Eskimos to care for the reindeer. Now the reindeer get along well in Alaska, and the people are no longer starving. The reindeer take the place of the caribou that the Eskimos lost by killing too many of them.

Alaska has more visitors than King William Island does. Many of the Eskimos of Alaska have taken on ways of other peoples. Our country has a number of good schools for the Eskimo children in Alaska. The United States of America is their country as well as ours.

James Sawders—Combine; Highton from Monkmeyer

Ways of living in Alaska. The top picture shows the entrance to an Eskimo's underground house. In the second picture some visitors are arriving by plane for a week end of fishing. In the picture below notice the American flag.

Screen Traveler from Gendreau



AT THE SOUTH POLE

You have learned about the way the sun shines between the Arctic Circle and the North Pole. You have learned about the climate there and the way the people live.

There is another place where the sun shines in almost the same way as at the North Pole. This place is called the South Pole. There too the sun shines all night and all day for about six months in the summer. Then the sun is hidden during about six months of winter darkness. During the summer the sun never rises very high in the sky, and it never gets very warm.

On the map on page 105 you will see a dotted line around the earth near the South Pole. It is called the *Antarctic Circle*. Compare the Antarctic Circle with the Arctic Circle, which is shown in the maps on pages 94 and 101.

What is meant by the Antarctic Circle?

As one travels from the South Pole toward the Antarctic Circle, the nights when the midnight sun can be seen grow fewer and fewer. By the time the Antarctic Circle is reached, the midnight sun can be seen only once during the summer. And there is just one day in winter when the sun does not rise at all. This is also true on the Arctic Circle, you remember.

There is one difference in the way the sun shines at the North Pole and at the South Pole. While the North Pole is having about six months of summer and sunshine, it is winter at the South Pole. There the sun is hidden for about six months. When the winter darkness comes to the North Pole, the South Pole is having its brightly lighted summer.

All the earth south of the equator has summer while the northern half is having winter. And the people south of the equator have winter while the people north of the equator are having summer.

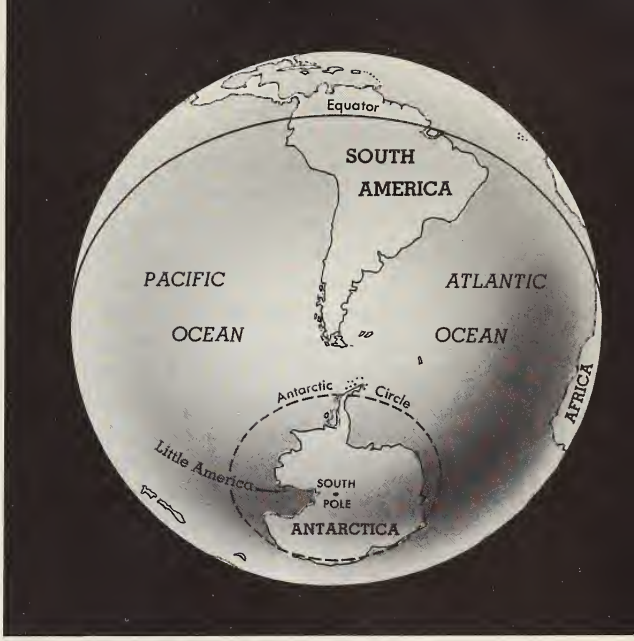
Why people do not live on the continent of Antarctica

The continent of Antarctica lies almost entirely within the Antarctic Circle. No

On the left is the Antarctic explorer, Richard E. Byrd, revisiting his hut at Little America in 1947. On the right are some penguins, those large, interesting birds found near the South Pole.

U. S. Navy from Gendreau

Charles Phelps Cushing



On this globe you can see the Antarctic Circle. It is the same distance from the South Pole all the way around. It shows where the midnight sun can be seen just one night each year. Find Little America, where Byrd and his men camped on the ice. See how close to the South Pole it is.

one at all lives on this continent, for it is covered with ice the whole year round. Birds and sea animals are the only living things to be seen in that cold land.

On the map on this page you will see a spot called Little America. This is where the brave American explorer, Richard E. Byrd, camped when he and his men visited the South Pole.

Perhaps in years to come men will find better ways of keeping warm in very cold climates. Then people might go to Antarctica to live. But it is too cold there now. Men who have explored Antarctica have had to plan very carefully in order to live there just a little while. They have had to take everything they needed with them. And they have had to return to their own countries before their supplies gave out.

MORE WAYS TO LEARN

ADDING TO YOUR GLOBE

Put the Arctic and Antarctic Circles on your globe. Put King William Island, Lapland, and Alaska on it. Make a dot to stand for Ar-luk's home.

READING ABOUT COLD CLIMATES

Read stories about people living in cold climates and about explorers of the poles.

You can find such stories in history and geography books, as well as in an encyclopedia. Geography is the study of our earth and its people. History is the story of peoples and countries up to the present time. This book contains both history and geography.

You can quickly find out whether a history or geography book tells about a certain person or subject by using its index. An index is in the back of a book. It gives the names

of the people, places, and things which the book tells about. They are listed in the order of the alphabet.

Find the index of this book and look for the word **Alaska** in it. When you find this name, you will see some numbers after it. The numbers mean that you will find something about Alaska on each of those pages.

Now look for **Byrd, Richard E.,** in the index of each history or geography book that you have. A person's last name is given first in an index or dictionary or encyclopedia.

Look up other explorers or cold places about which you would like to learn. Plan how best to share with one another the things that you learn from your outside reading.

MAKING A BOOK

Make a book for your classroom library about different peoples who live in the cold parts of the world. Make pictures for the book. Plan the work together and let different groups do different things.

Be sure to show these things about people in cold climates: (1) their homes, (2) their food, (3) their clothes, (4) their useful animals, (5) their work, (6) their play, (7) the trade goods that other people get from them.

PLANNING A PROGRAM

Prepare a program for your parents or for another class. Share with them the things you have learned about the parts of our world near the North and South Poles. Vote on which of these or other things you will have on your program:

1. Two-minute talks about explorers who have visited the poles
2. A handmade motion picture about people in cold climates
3. A play about "The Best Dog in the Pack," or some other story
4. A radio quiz in which questions are asked about life near the poles

Make a list of the things that must be done to get ready for this program. Divide the work fairly among the class. Do your own part of the work carefully and on time. Remember that the work of the whole class depends upon your doing your own part well.

GETTING FACTS

Below are ten sentences that are not finished. Write the numbers of these sentences on a sheet of paper, one under the other. After each number write the word or words that should be used to finish the sentence. Do not write in this book.

1. The climate near the North Pole is ___.
2. The Eskimos get most of their food by ___ and ___.
3. They have no trouble in keeping food a long time because of the ___.
4. Three things that Ar-luk's father bought at the trading post were ___, ___, and ___.
5. An igloo is a ___.
6. Two kinds of food eaten by Ar-luk and Nik were ___ and ___.
7. The seal makes a hole in the ice so he can ___.
8. When Ar-luk's family moved, they carried their goods on a ___.
9. A group of dogs that pulls a sled is called a ___.
10. The most important dog an Eskimo owns is called the ___.

Be sure that you have spelled the words on your paper correctly. If you are not sure of the spelling of a word, look it up in a dictionary.

LEARNING BY COMPARING

Compare Eskimo and Amazon Indian ways of living, using the charts on pages 98 and 64. Tell why their homes, foods, clothing, hunting, trading, and traveling are different.

A GAME WITH WORDS

Below is a list of words or word groups. Let someone write each of them on a small card or slip of paper. Use the cards in the game described below the list.

cache	Arctic Circle	caribou
trail	midnight sun	harpoon
sinew	trading post	blizzard
igloo	Antarctic Circle	reindeer
Ar-luk	spearhead	Lapland
marker	missionary	kerosene
seal	soapstone	custom
copper	mouth (of a river)	husky
ermine	wolverine	blubber
Nik	Little America	Manilak
Lapp	Coppermine River	sealskin
Alaska	King William Island	lead dog

Divide the class into two teams. Choose a leader for each team.

The two leaders each take half of the word cards. They take turns, each calling a word from a card to a member of his own team. If the person called on can give the meaning of the word as it is used in this chapter, the leader keeps the card. If the meaning is missed, the card is given to the leader of the opposite team. The team that ends the game with the most cards wins.

SEEING MORE IN PICTURES

Are you learning to see all there is to see in a picture? Look again at the picture on page 95. What time of year is it? How can you tell? How would you know that this is a trading post? What ways of living has the Eskimo borrowed from white men? In what way does the trader dress like the Eskimos? The furs the Eskimo is trading are fox and sealskin. Can you see what kinds of food he is getting? How does the Eskimo feel about the trading that he has just done? What makes you think so?

Do you like the picture of Lapp children at the top of page 102? Why are they dressed so warmly in summer? Why is there still some snow on the ground and on the mountain? Is there any difference between the way the boy and the girls are dressed? What is the second girl holding? Would you like to play with these children? Why or why not?

The picture of Byrd on page 104 shows the hut in which he stayed alone for over four months in 1934. He was poisoned by a gas from the stove and nearly lost his life. Can you see the stove and the coffee pot? What kind of light did Byrd have? How did he dress while he was in the hut? Do you see his fur cap on the shelf? What was the hut made of?

MUSEUMS AND EXHIBITS

Is there a museum in your community? A museum is a place where interesting things are collected and shown.

If there is a large museum near by, plan a trip to find out what you can about very cold lands. The museum may have something about the explorers of these lands or the people who live there. Before you go, decide what you should look for. When you return, talk together about the trip and what you have learned from it.

If there is no museum near you, find out whether your public library has exhibits about the Arctic and Antarctic lands or their explorers. An exhibit is a group of things arranged so that they may be easily seen and studied.

You may wish to begin a museum of your own. You can arrange exhibits about the different peoples and places that you study this year. Gather together your pictures, stories, and maps, and anything from those places that members of your class can bring. Put a neatly printed card under each thing, telling what it is and an interesting fact about it. Keep adding to your collection as you read each new chapter.

Esmat and Jasim are an Arab girl and boy who live in a tent in a great desert called the Sahara. Here Esmat is showing her brother the design of the earrings which her new necklace is to match.

Where the Dry Sands Drift

THE next story is about two Arab children whose names are Jasim and Esmat. These two children live in the Sahara (*sà hä'rà*) on the continent of Africa. The word *Sahara* means "great desert." A *desert* is a place where few, if any, plants can grow.

Some places are deserts because it is too cold there for much plant life. The whole continent of Antarctica is a cold desert because it is always covered with ice. But most deserts are caused by lack of water. In this book we shall use the word *desert* to mean a very dry place. The Sahara is the largest desert in the world. Find the Sahara on the globe on page 110.

A map of this desert appears on page 111. Find the home of Jasim and Esmat. You will see that they live in the central part of the Sahara. This part is very sandy. But in many other areas the ground is rocky and hard.

There are many parts of the Sahara where people cannot make their homes. It is just too hot and dry. But in other parts there are coarse grasses and thorny *cactus* plants that can grow with very little water. Some kinds of sheep and goats can eat the coarse desert grass. And *camels* can eat even the thorny cactus plants. Camels are used for carrying loads.

In the Sahara there are shepherds who make their living by tending these sheep and goats and camels. The father of Jasim and Esmat is one of these shepherds. Arab shepherds are called *nomads*. The word *nomad* means "one who wanders." These shepherds wander about in search of patches of coarse grass for their animals. What other nomads have you read about in this book?

As you read this story, see how much you can learn about life on a dry, hot desert. See if you can tell why desert people live the way they do.

The Sahara is about in the center of this globe. The Eskimo lands are shown in black again. Notice that the Sahara is some distance from the equator, while the Amazon and Congo Rivers are close to it. On what continent is the Sahara? Find the Arctic Circle and the North Pole. Why do the Antarctic Circle and the South Pole not show on this map?

THE SHINING FLUTE

Esmat stood in the opening of the big black *tent* which was her home and looked out across the desert. She was watching for the shepherds who would soon be returning home with their flocks. Jasim, her brother, was with them. And Esmat had something to tell him.

The desert sand was golden now because of the setting sun. As far as her eyes could see, the sand lay in little waves or hills called sand *dunes*. The desert looked for all the world like a great ocean whose waters had turned to gold. Above it the red and orange sunset flamed bright against the deep blue sky. Esmat loved this sunset view of the desert. It made a beautiful picture.

Esmat herself made a beautiful picture as she stood before the great black tent in her loose robes of white. She held her strong young body straight. Her brown skin was smooth with perfect health. And her dark eyes were shining with the thought of her good news.

Esmat's eagerness to talk with Jasim

Now she saw a line of moving black dots on the golden sand. It was the returning shepherds. Esmat called to her mother and ran quickly to get her leather milk pail, which was made of *goatskin*. When the shepherds arrived, she was ready for work. The evening milking must be done, and the sheep, goats, and camels must be settled for the night. Then there would be time to talk to Jasim.

While Esmat helped the women of the camp to milk the goats, Jasim was busy with the camels. With a goatskin bag he drew water from a well and gave it to

the camels to drink. Then their knees had to be tied together, so that they could not wander away during the night. The camels seemed very cross, as camels usually seem to be. They groaned and quarreled. One camel almost bit Jasim's left hand as the boy worked at tying the animal's knees together.

Esmat was anxious to talk to Jasim. It seemed as if they would never finish their evening tasks. But the animals were finally settled for the night, and the camp became less noisy. The milk was put away in goatskin bags. Then the evening meal was served in the front room of the great black tent.

Jasim ate with the men. They sat cross-legged on the thick, rich-looking rugs that covered the sandy floor. For their meal they had cheese, warm goats' milk, and dried dates. Dates grow on tall palm trees called *date palms*.

After the men had finished, the women were served. Arab women never eat with the men. The girls eat with the women.

Esmat ate as quickly as she could. Then she slipped out of the women's part of the tent to meet Jasim outside. He was waiting in the light of the stars.

What it was that Esmat wanted to tell Jasim

"What is it?" His voice sounded a little cross. Jasim liked to sit with the men in the evening and listen to their talk. Right now he might be missing something that he would like to hear.

"I finished the rug today, Jasim," Esmat whispered. "And, oh, Jasim, it is beautiful! The colors are so rich and soft! I am glad I have learned to make the *dyes* for the wool. And glad too that Mother taught me to work so carefully at the spinning and the weaving. Sometimes I could have cried because I thought I would never learn to make a good rug."

"The peace of *Allah* (God) be upon you!" cried Jasim. "I am glad the rug is done, for you have worked on it long

On this map the Sahara is the area inside the heavy black line. Can you tell which marks stand for hills and which marks stand for mountains? Find Nefta and the home of Jasim and Esmat. Where is the Atlantic Ocean? Where are the Red Sea and the Mediterranean Sea? If you are not sure, look back at the map on page 32. On what continent is the Sahara?

enough. But what has this to do with me? Did you ask me to meet you here just to tell me that the rug is finished?"

"No, Jasim, no! Let me speak! You will see what it has to do with you. Today, when the rug was done, Mother was very pleased. She said she had not expected this rug to be of much value, since I was practicing on it. She had planned to keep it for use in our tent. But she thinks that my work is very good indeed and that the colors go well together. She says it is a fine rug and should bring a good price in the market.

"When Father goes to Nefta to trade, the rug is to be sold. And because Mother is pleased with my work, much of the money is to buy what I want most."

"A thing of your own choosing?" Jasim was interested enough now.

"Yes," said Esmat, "the thing I want most of all."

"Ah," sighed the boy, "I know well enough what I would choose. I would get a *flute*. A real one, made of metal. Then as I watched my sheep through the lonely days, I would play the songs that sing in my heart. They would come out of the flute's shining throat clearer and richer and sweeter than when I blew them in. What will you choose, Esmat?"

"A necklace," the girl answered. "A silver necklace, heavy and wide, with lucky charms hanging from it. And it shall match my earrings! You, Jasim, are to choose my necklace for me."

Jasim's promise to his sister Esmat

"I!" Jasim almost shouted the question. "Did Mother say that I might go along with the men to trade at Nefta?"

"Yes," Esmat whispered, "if Allah wills it. She said you must learn to trade, just as I must learn to spin and weave. She said you would go with Father to sell the rug. So I asked her to let you choose my necklace, since I am a girl and may not go along."

"May your hand never pain you," cried Jasim. "If Allah wills it, I will choose the prettiest silver necklace that can be found!"

"It's to match my earrings. Don't forget that," said Esmat.

Jasim promised. "Now I guess you are glad that Mother made you take out the rough place in your rug," he added.

"Yes," laughed Esmat, "I am glad now. But it was hard enough at the time. It took me so long to take out the work I had done and weave it all over again."

A sudden thought struck Jasim. At this minute the men might be planning their trip to Nefta!

"I must go, Esmat! I will choose a beautiful necklace for you. Never fear."

Jasim hurried around the corner of the tent. The men were sitting cross-legged on their rugs beneath the stars. Jasim sat down at the outside of the group of men. They were indeed planning their next trip to the *bazaar* (bȧ zär′), or the group of shops in a town.

What the men had to sell when they went to the bazaar

They had much to sell besides Esmat's rug. There was wool from the sheep, some white and some black. Some of the wool had been woven into warm cloth. And some of the cloth had been made

Screen Traveler from Gendreau

Weaving a rug on a loom in northern Africa.

James Sawders—Combine

Drawing water from a well in a goatskin bag.

into more than one *burnoose* (bûr nōōs′). This is the long outer robe that the Arabs wear. There was strong black goat's-hair cloth, such as they use for their "houses of hair," or black tents.

There were bags full of *camel's hair*. This would be shipped across the seas to other countries, to be made into a very fine cloth. People in such faraway places as the United States of America would pay a great deal for camel's-hair coats. So the hair would bring a very good price in the bazaar.

The men also had goats and sheep to sell, and a few spare camels. There was leather, too, made from the hides of their animals. Oh, yes, it had been a good year, and they had plenty to trade. They would buy rice, *barley*, coffee, metal goods, cotton cloth, and other things they could not get from the desert. Barley is a grain something like wheat. Jasim was glad indeed that his father had good flocks of camels, goats, and fat-tailed sheep.

This year Jasim was to have a share of the flock for his own. Seven sheep out of every hundred in the flock he tended were to be given Jasim's own mark. The wool from these sheep would be his. Their lambs would also belong to him. By the time he was a man, Jasim would have flocks and a tent of his own.

A number of families lived in this nomad group to which Jasim and his family belonged. They pitched their tents together. But one tent stood a little apart from the others. In it lived the *sheik* (shēk), or chief, of the *tribe*. A tribe is

James Sawders—Combine

These Arabs are buying and selling sheep in a market in northern Africa. Notice their clothing.

a group of families. When problems came up among the families of the tribe, they talked them over with the sheik.

Jasim's excitement over the trip to Nefta

It was decided that the *caravan* should break camp after one more day. A caravan is a group of travelers, together with their animals and the other things they own.

The caravan would move toward an *oasis* (ō ā′sĭs), or watering place, which was a three-day journey away. Some men from a passing tribe had told them that rain had fallen near this oasis the day before. So there should be new grass near it within a few days. The flocks would have pasture, and there would be water from the spring. The tribe would stay at this oasis while some of the men went to Nefta to trade at the bazaar.

As Jasim listened to the men's plans, his heart beat faster. Perhaps the sheik would think Jasim should stay with the women and children while the trading caravan made its journey. He had always stayed with them before.

Had the sheik noticed how tall he was growing, he wondered? Had he noticed how faithfully he tended his father's sheep? Had he noticed how well he could handle even the meanest camel? These had been his lessons—the only ones

he had ever been taught. And he had learned them well.

Maybe the sheik had noticed. Anyway, Father must have known. For when the number of camels that should go on to Nefta had been counted, there was one for Jasim. A happy boy rolled up in his warm burnoose that night and fell asleep on his rug in the tent.

Who wouldn't have been happy? Nefta was so great an oasis that a whole town had been built upon it. It was watered by many springs. Jasim had often heard of its wonders, but he had never been there. He was sure that such a trip would bring him complete happiness. Little did he dream of what would happen there!

Preparing to break camp

The next day was filled with the business of getting ready to break camp. They must make an early start the following morning. They must be on their way long before the sun was up, while it would be cool enough for traveling. By the middle of the day the sun would be almost directly overhead. Its rays would be so hot that the tribe would need to stop and rest until it became cooler.

Esmat *churned* cream from the milk of goats and camels to make fresh butter. Mother heated some of the milk and made it into cheese. There would be little time to make butter and cheese while they were traveling. They would drink the milk while it was fresh or after it had turned sour in the goatskin bags. The Arabs use a great deal of sour milk. Can you tell why?

The women ground some barley in a little hand mill and baked a fresh supply of barley bread. How good the warm bread was that night, as Jasim and Esmat

An Arab is guarding these tents outside an oasis town in the Sahara. Find a donkey and a camel.

James Sawders—Combine

The caravan nearing an oasis. Esmat and Mother are in a small tent. Jasim and Father ride camels.

ate it with the fresh butter! Most of the bread was put away for the journey.

Getting a camel ready for the journey

The following morning the stars were still bright overhead when Jasim led his camel to the well. The animal must have water for the journey. The camel would not need to drink on their three-day trip to the next oasis. One of his three stomachs would hold enough water to last for ten days if necessary. That would be very hard on him, though. But three days without a drink would not trouble him at all.

Jasim felt his camel's hump. It was fat and firm. Jasim knew that the fat in this hump could be used by the camel in place of food. He had often seen camels come in from a long journey with their humps thin and no longer firm. This was because their food had given out on the way. The fat stored in their humps had kept them from starving. And they had been able to bring their masters safely to an oasis, where food could be obtained.

Jasim filled goatskin bags with drinking water and put them on the camel. Just then Father came up to look at the load. The boy knew that the camel's load must be just as heavy on one side as on the other. So he had packed it with great care. However, he waited anxiously while Father looked it over. He was glad when Father nodded in a pleased way and moved on to attend to his own camel.

Usually, when the camp moved, Jasim rode on one of the pack camels that carried the tents and other goods. He even shared this camel with other children. This was the first time he had ever been allowed to ride a camel alone in the caravan. When the camel kneeled down for him to mount, he felt very proud indeed. He hoped the other boys were watching.

Starting the journey in the early morning

With Jasim upon him, the camel rose to his full height. The boy pulled his wool burnoose close about him, to protect himself against the cold morning air.

The sheik, mounted on a lively black horse, goes on ahead to see if they may camp at the oasis.

He sat straight and tall. He touched the camel's neck to guide him into the long line of the caravan. They began to move slowly out across the sands.

At the head of the line rode the sheik. He was mounted, not on a camel, but on a lively black horse. Jasim thought this horse the most beautiful animal he had ever seen.

But handsome as the horse certainly was, he was not so useful in the sandy desert as the camel. His small hoofs sank down into the sand, so that he tired quickly. The huge feet of a camel spread out like great flat cushions on top of the sand. He can walk upon the desert with ease.

Horses suffer greatly from thirst, too, unless they have plenty of water. So water for the sheik's horse had to be taken along by camel back, even on this short journey. His food had to be carried in the same way. A horse's mouth is too tender for the coarse grass and thorny cactus on which camels can get along. So you can easily see why only the sheik rode a horse as the caravan got under way.

Of course the real trip to Nefta had not yet begun. The tribe must first be settled at the smaller oasis that was only three days away. But Jasim had the camel that he would ride on that longer trip across the drifting, burning sands.

What it is like to travel in the desert

The trip to the first oasis was made without accident. Each morning the travelers rose while the stars were still bright in the heavens and started out before dawn. It was very cold at that time of day, and their wool burnooses felt very good indeed.

When the sun came up, the temperature quickly changed. By the time the sun had climbed a little way into the sky, the travelers had become rather warm. Then they took off their wool burnooses and fastened them to their camel loads. Their flowing white cotton robes and headcloths protected their bodies from the hot sun and also let the air in.

When the sun was almost straight overhead, they could bear its burning rays no

longer. So they made camp and ate their meal of cheese and dates. Then they slept on their rugs until the middle of the afternoon. By that time the sun's rays were more slanting, and they continued their journey until sunset.

By the third day the water bags were almost empty. Jasim and Esmat, along with all the others, were very, very thirsty.

Esmat, riding with her mother in a sort of tent that sheltered them from the sun, found fault a little. She was so tired of the heat! The rough swaying of the camel from side to side made her feel a little sick. And how thirsty she was! Her throat was so dry that it ached, and her tongue felt almost too stiff and thick to move.

Jasim was more thirsty than she, for he had only his headcloth to shelter him from the sun. But he dared not find fault. Anyway, no one would hear him but his camel. And that mean old fellow found enough fault for both of them!

The arrival at the oasis

It was nearly sunset of the third day when they saw the oasis. Far across the desert they caught sight of the tops of tall palm trees against the hot, clear sky. That meant water! Clear, cold water!

The sheik rode on ahead to see if it was all right for them to make camp there. Soon he rode back to say that all was well. Light rain had fallen, as the travelers had said. And the grass that had sprung up quickly after the rain was still there. He believed there would be pasture enough for their flocks until he and the other men could get back from Nefta.

In spite of their dry throats and tired bodies, the travelers were a noisy, happy group. They got down off their camels and prepared to camp near the oasis.

It would have been pleasant to make camp in the shade of the palms, but they could not do that. Every inch of space that was watered by the one small spring must be used for growing vegetables and fruits. Even the people who make their homes at a small oasis must live at the edge of it. They cannot have their homes on any of the valuable moist ground. Every bit of it must be left for the plants and the trees.

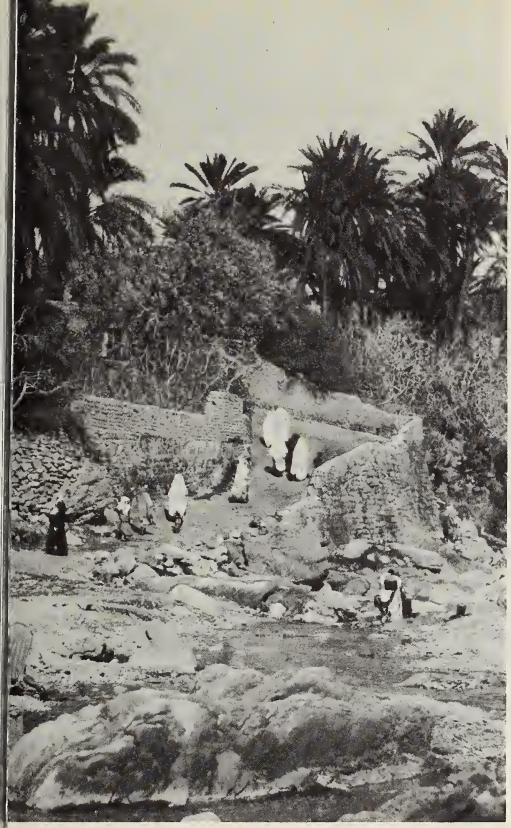
Yes, Jasim and Esmat knew that their camp must be made on the desert sands. But they also knew that some of their

Arab children, tents, and camels in the Sahara.

Charles Phelps Cushing

This goatskin bag is used for churning cream.

James Sawders—Combine



Charles Phelps Cushing

Arab women leaving the stream of a small oasis.

Screen Traveler from Gendreau

Arab women washing clothes in a large oasis.

number would soon go to the oasis for fresh water and food. For under the tall date palms of the oasis grew orange, apricot, and olive trees. And under the fruit trees grew beans, peppers, cucumbers, and melons. No such foods were ever to be found on the desert itself.

"There will be a feast in the tents tonight," thought Jasim. He took the load from his camel. Then he helped the others cut cactus bushes with which to build a fence around the camp.

What the Arabs had to eat that night

And what a feast there was! It was given by Jasim's father. Four men were needed to bring in the huge brass tray on which the food was placed. On the tray was the good-smelling *couscous* (kōōs′-kōōs), the favorite food of the Arabs. To make the couscous, a whole sheep had been boiled. This was placed in the middle of the huge tray. Around it were piled the barley and fresh vegetables, including many red peppers, which had been boiled with the sheep.

Flat barley cakes, somewhat like our own pancakes, were served with the couscous. Each person took a barley cake and rolled it up into a sort of cone, like an ice-cream cone. Then he filled it with couscous and ate the couscous and the cone together.

The feast in the tent. Jasim's father is serving, while the other men and Jasim eat the couscous.

When everyone had eaten all the couscous he wanted, Jasim's father served the coffee. Then he ate his own dinner. An Arab host never eats until all his guests have finished.

When the meal was over, the men wiped their hands in the sand. Even though there was water here in the oasis, it was too scarce to be used for washing one's hands. Every drop of it must be saved for drinking or for growing food.

Washing the clothes in the cool stream

The women would be able to wash the clothes, though. How glad they were of that! Bright and early the morning after the feast Mother and Esmat took their family's clothes to the stream. It flowed from a spring and watered the oasis.

They stood in the cool water while they pounded their clothes on a rock and washed them in the stream. Other women and girls were there washing clothes. Esmat thought the work was fun. How she loved the feeling of the cool water on her bare brown legs! She was sorry when the washing was finished, even though her back and arms did ache.

Meeting a sandstorm on the way to Nefta

It was two days later that the camel caravan started for Nefta, with Jasim riding along. Esmat and the other children of the tribe had watched him as he mounted his kneeling camel. Jasim had proudly guided his camel into the line of men and beasts that was moving out across the desert.

These travelers moved faster, now that they no longer had the flocks or the women and children with them. They stopped for shorter rests during the middle of the day. Sometimes they rode far into the night while the air was cold and the moonlight made it almost like day.

After three days they had a *sandstorm.* When the sky suddenly became very yellow, the men and camels both knew what to do. The camels lay down with their backs to the wind. The men got down on the ground in front of the camels. They pulled their headcloths over their faces to protect them from the sharp, cutting sand that blew against them.

All day long the sandstorm continued. When it was over, they dug themselves out of the high-piled drifts of sand that almost covered them. It was then that they found three of their water bags broken.

Jasim was very glad that his camel and load were both safe. Father was pleased, too. He was proud of Jasim. The boy had not lost his head during the storm.

Visiting a town for the first time

It was not many days before the town of Nefta came into view. (See the map on page 111.) Jasim's heart beat faster at sight of the tall green palm trees against the sky. He urged his tired camel to a little faster pace.

Jasim had never seen a town before. At Nefta, he had been told, there were many different kinds of bazaars. There was one bazaar that had only *pottery* shops. Pottery shops sell vases and other things made of clay. In another bazaar nothing but leather goods was sold. Jasim knew that there were more bazaars than he could count on the fingers of both hands.

Jasim meant to see them all—every single one. But of course he would spend the longest time in the bazaar of the *silversmiths,* who make articles of silver. There he would choose the necklace for Esmat. At least that was what Jasim meant to do. But it wasn't what he did. What he actually did do makes quite another story, as you will see.

Starting out to buy the necklace

While the men were camped for the second day just outside of Nefta, Father gave Jasim the money. Esmat's rug had been sold the day before, and even Father had been surprised at the price it brought. Jasim's eyes grew big as Father counted into his hand three thousand *francs.* A franc is worth much less than a cent. He was to spend a very little of it for his lunch. The rest was to go for Esmat's necklace.

"See that you spend it well," Father said. "Do not pay the first price. You must prove yourself a good trader."

"If Allah wills it," said Jasim, "I shall make the best trade in the bazaar today."

Poor Jasim! How little he guessed what the day would bring! Whistling loudly, he set out through the narrow streets of Nefta toward the bazaar of the silversmiths.

Jasim decided to stop first of all and use his lunch money to buy some sweets. Then he would have the whole day free to *bargain* for Esmat's necklace. Men

Screen Traveler from Gendreau

An Arab boy drawing water at a fountain.

Charles Phelps Cushing

A pottery bazaar in a city of northern Africa.

were sitting all along the streets with trays of sweets: dates, nuts, raisins, squash seeds, and other good things. Jasim remembered one man on a certain street. His sweets had looked better than the rest. Jasim turned in that direction.

Why Jasim forgot his promise

Was it his fault that his way led through a street where he saw a metal flute? It was not in a show window, for none of the shops in Nefta have windows. In fact they don't even have doors. Each shop is just a tiny closet, set into the wall and open in front. In this small space the merchant hangs his goods.

The flute was shining in the sun as it hung above the head of the shopkeeper. It was not a new flute. Some traveler, passing that way, had traded it for something else. But to Jasim it was perfect. He stood with his mouth open and stared at it.

The shopkeeper frowned at Jasim and seemed about to send him away. He did not like to have young boys handle his goods. Boys had no money with which to buy.

Jasim guessed the man's thoughts. He would show the shopkeeper that he did have money. He opened his tiny goatskin bag, and slowly counted the *notes,* or bills, that it held.

The storekeeper's manner changed at once. "Peace be with you!" he said, smiling broadly. "You are a clever boy indeed. You know a fine thing when you see it, for you are looking at the best thing in my bazaar. Can you play the flute?"

"Yes," answered Jasim. He did not explain that he had never played anything but a flute that Father had made

from a *reed*. A reed is a kind of grass that has a long, hollow stem.

Learning to play the shining flute

The merchant took down the shining flute and held it out to the boy. "Try it," he offered.

Now that was just what Jasim wanted to do. He wanted it more than anything else in the world. But he was not sure he could play a metal flute, and he was ashamed to fail before the merchant.

"See, like this." The merchant put the flute to his lips and played a little tune that Jasim knew quite well. He had often played it to his sheep as he watched them on the desert.

"Play it again!" cried Jasim. "And may your hand never pain you. Play it again!" He felt that if he could watch the merchant play the tune once more, he would be able to play it himself.

Again the merchant played. Again Jasim watched.

With his heart beating fast, the boy put the flute to his own lips. Several wrong notes came from it. Then slowly, a few notes at a time, the tune began to come. Over and over Jasim tried. Each time the tune was more clear and free.

How the shopkeeper got his way with Jasim

Just as Jasim felt that this time he would play the tune correctly, the merchant held out his hand. "The money," he said. "Only three thousand francs. At that I am giving you the flute. It is worth ten times as much."

Jasim opened his eyes wide. Three thousand! He put the flute down and turned away. "No," he said in a flat voice. "I cannot buy it."

Nefta, an oasis that has 450,000 date palms. Notice the flat-roofed houses in the distance.

James Sawders—Combine

But the merchant expected this. No one ever paid the first price that was asked in an Arab bazaar. "Twenty-five hundred francs!" he urged. "Look how it shines —like the sun itself." He held the flute so that it caught the sunlight more clearly than ever.

Jasim stared at the shining beauty of it. He could not take his eyes off the flute. "No," he said weakly. "No, no!" He began backing away from the shop. He wanted to see the flute as long as he could, even as he went away.

"Here, play that tune again." The merchant followed him and put the flute into his hands. "I have never seen a boy learn so fast. When you play it this time, the music will be as smooth as the song of a bird."

Jasim's fingers closed on the shining metal. "Just once more," he thought. "Surely there can be no harm in playing it just once more." He put the flute to his lips. Clear and sweet came the little tune. Not a false note sounded.

The merchant bent to Jasim's ear. "Two thousand," he whispered. "So little I am ashamed to say it out loud. It is almost wrong to sell so cheaply a flute whose voice is of such golden sweetness."

"Two thousand," thought Jasim. His breath came short and hot. "There would be a thousand francs left." Surely that would buy a necklace fine enough for a girl. He would make a good trade, and that would help. Bŭt no! He must not do it!

"Fifteen hundred!" the man whispered. "I will count out the money for you." He reached for the goatskin bag.

"No!" Jasim grabbed it back. "I will count it myself." And the notes fell slowly into the merchant's eager hand.

Finding a necklace that Esmat would like

Jasim held the flute tightly under his arm and went on toward the bazaar of the silversmiths. His feet dragged a little. He wanted to play again, but his throat was dry and hot and he felt short of breath.

"I will play it tonight," he thought. "When all the camp is asleep, I will slip out of my tent into the open desert. There, under the stars, I will make its golden voice sing all the songs that I know." He knew just the place where he might hide the flute in the tent until the right time came.

He stopped planning, for here were the shops of the silversmiths. Almost at once he saw just the necklace that Esmat would like. It was of heavy silver. Lucky charms, shaped like hands, hung from it. The charms were also made of silver, with tiny designs in them. Best of all, the necklace just matched Esmat's earrings.

"How much?" Jasim's heart seemed to be in his throat as he asked the question.

"Five thousand francs."

"Five thousand!" Even with the best of bargaining he could not hope to get the necklace for the money that was left. Well, there were other necklaces. And there were other merchants.

What Jasim could get for fifteen hundred francs

All day long Jasim went from shop to shop and back again, looking and bargaining. But the money left in the

With tears in his eyes Jasim counted out the money and took the cheap necklace in return for it.

goatskin bag would not buy the thing he sought. Sunset found him again at the shop of the first silversmith. There still hung the necklace that matched Esmat's earrings.

"You! Again!" The merchant was really angry. "You are like a buzzing fly around here today. Get out before I take a stick to you!"

"I must have a necklace," sighed Jasim. "A silver necklace for my sister. With lucky charms that hang from it."

The silversmith laughed, but his laugh was not pleasant to the ear. "Such necklaces cost money, boy. How much have you to spend?"

Jasim knew that what he said next was foolish. But he was tired and hungry, and the merchant was already taking down his goods for the night. The caravan would be leaving early the next morning.

"Fifteen hundred francs," he said. "What can you give me for that?"

The merchant looked through his goods. He took out a necklace of silver wire. "This is of silver." He held it up for Jasim to see. "And it has lucky charms that hang from it."

It was true. It was also true, as Jasim clearly saw, that the silver wire was thin and light. It had taken almost no work to make the necklace. And it did not match Esmat's earrings.

"Take it," said the merchant, "or else get out. I cannot stay all night talking with a foolish boy who does not know a bargain when he sees one."

There were tears in Jasim's eyes, but he said no more. The notes were counted

Screen Traveler from Gendreau

The grain market in an oasis town about a hundred miles from Nefta. Notice the piles of grain.

into the merchant's hand, and Jasim took the cheap necklace in return.

Jasim's attempt to hide the truth

There was an unhappy time in the camp that night when Father saw the cheap necklace. "Three thousand francs for that!" he cried. "It is not worth five hundred! I should not have trusted you alone at the bazaar. But I thought you had grown into a boy of judgment!"

We will not stay to see all of that painful scene. It was hard enough for Jasim, who had got himself into it.

It was a sad boy who rolled into his rug and lay wide awake until all the others were asleep. Over and over he kept saying to himself, for comfort, "Anyway, I have the flute." He had hidden it safely away.

When he felt sure that the others were sound asleep, he slipped out quietly, taking the flute with him. Quickly he made his way out into the desert. The great sand dunes looked so much alike in the moonlight that you or I would have lost our way. But Jasim had no trouble. Like all boys of the desert, he looked to the stars. They told him the direction in which he walked.

He must go far enough away so the

flute could not be heard in the tents. Jasim meant to play and play until the music eased the terrible ache in his heart. He stopped at last and sat down in the shadow of a sand dune. It was cold out under the stars, and he pulled his wool burnoose closer about him.

Why Jasim's flute did not give him pleasure

How soft and warm his burnoose was! Esmat had woven it for him from the wool of the white sheep. The first thing she had done was to spin the wool into thread. Then day after day she had worked at weaving the burnoose, singing as she worked. Esmat loved her brother dearly. That he knew. How proud she was to be able to weave a burnoose for him!

And what a good little weaver she had grown to be. How well her rug had sold in the bazaar!

Jasim could see her as she had stood in the moonlight, telling him that the rug was to be sold. How her merry eyes had danced as she talked of the necklace to match her earrings. She had said that no one but he should choose her necklace for her.

Jasim looked at the flute in the moonlight. He would not be able to show it to Esmat. He must hide it and play it only in the desert while he watched his sheep alone. Well, it would be a comfort to him there. Now he must practice on it. He must practice and practice until the golden tunes came out of its throat with clear, perfect sweetness. Then he could play away this terrible hurt in his heart that was growing worse and worse.

He put the flute to his lips. No sound came. His throat was so tight that he couldn't blow. Besides, there was no longer any song in his heart.

Suddenly Jasim threw the flute far from him and fell face down on the desert sand. And there Father found him. His face was buried in his arms, and one great sob after another shook his whole body.

How Jasim's father was able to help him

Jasim was not the only one that night who could not sleep. As Jasim had sat silent over his poor bargain, Father had guessed that something was wrong. It was something even worse, he felt, than knowing that a clever merchant had cheated him in a trade. So, while others slept, Father had been worrying as he lay on his rug and stared into the darkness. He had heard Jasim slip out into the cold night and had followed him.

Father kneeled beside the sobbing boy and heard the whole sad story.

"What can I do, Father? What can I do?"

Father answered simply. "It is lucky for us that the sheik will not leave Nefta tomorrow morning, after all. We are to stay one more day. There is still time for you to right this great wrong."

The next morning it was Jasim who led the way back to the bazaar of the silversmith. Father went with him. The merchant finally agreed to take the cheap necklace and the flute as part payment for the necklace Jasim wanted. But he must have something more. What else could Jasim put into the bargain?

From a pocket of his robe Jasim took

out his homemade flute of reeds. "It is all I have," he said as he held it out to the merchant.

The merchant frowned. "It is worth nothing," he said.

But an Arab merchant hates nothing more than to lose a trade. When the shopkeeper saw that the boy indeed had nothing more to offer, the bargaining was done. "Take it," cried the merchant, throwing the necklace to the boy. Then the shopkeeper took the homemade flute, along with the shining metal one and the poor necklace of thin wire. How happy Jasim was!

That is how it happened that Jasim took back to Esmat the very necklace he knew would please her best. And that is why Jasim busied himself for many days to come with making a new reed flute. He wanted a flute on which to play the songs that flooded his heart.

How did Esmat show her love for her brother?

I cannot tell you how Esmat found out what became of Jasim's old reed flute, for I do not know. I don't know how she learned about the shining metal flute in the bazaar at Nefta, either. But I do know that the tunes from Jasim's new reed flute were happier than any he had played before. Can you guess why?

I know something else, too—something that was a secret, even from Jasim. Not all the wool that had been cut from Jasim's sheep was in the bag where he had stored it. Esmat was weaving some of it into a beautiful new rug.

Mother watched Esmat as she dipped a handful of wool into a pot in which she had boiled some roots. When the wool came out, it was the red of the evening sunset. Esmat laid it out to dry, along with the yellow and the blue wool she had dyed the day before.

"You have made beautiful colors, Esmat." There was pride in Mother's voice. "This rug should sell for an even better price than the one you sent to Nefta."

"It should sell for many times as much as the wool in it would bring," the girl answered. "After Jasim has had the price of the wool, there will still be much money left over. And, Mother, you will not forget that I am to choose how the extra money is to be spent?"

Mother smiled upon her daughter, for she shared Esmat's secret. "It shall be as you have chosen," she answered. "May Allah bring you peace, Esmat. You have a kind heart and a great love for your brother."

You who have read this story may have just one guess as to how Esmat planned to spend the money. What is your guess?

DESERT WAYS OF LIVING

Did you ask yourself any of these questions while you were reading the story of Jasim and Esmat? You will find the answers in the pages which follow.

1. On the map on page 110 you will see that the Sahara is some distance from the equator. Yet during the daytime it is even hotter on this desert than in the rain forests along the equator. How can this be true?

2. Since it is so hot on the Sahara during the day, why is it so cold during the night?

3. Why do people in such a hot land wear so many clothes?

4. Do the Arabs always live in tents?

5. Do the Arabs ever own land?

6. Is water free in an oasis town, as it is in the desert?

7. Do the children of the desert ever go to school?

8. How can people on the desert find their way without roads or trails?

9. Why do so few people visit the interesting Sahara?

10. Are there other deserts in the world besides the large one called the Sahara, which you have just read about?

Temperature in the desert

It is true that the sun shines more directly along the equator than anywhere else on the earth's surface. Yet the temperature does not rise so high at Bogana's home near the equator as it does on the Sahara. And the Sahara is much farther from the equator. Find the Amazon River and the Sahara on the map on page 110. See about how far each one is from the equator.

Although the sun's rays are more direct along the Amazon, the people are protected by the thick rain forests. They are also protected by the large amount of *moisture,* or water, in the air. The roots of growing plants gather moisture from the earth. They breathe this moisture out into the air through their leaves.

No doubt you have noticed how much cooler it is in a thick wood than in the open sunshine. Have you noticed how much cooler it is beside a lake or an ocean than where there is no water? Both the deep shade of the forest and the moisture in the air help make Bogana's home cooler than Jasim's.

Quick changes of temperature

Have you ever walked with bare feet on a warm day? You may have noticed that the grass felt cooler to your feet than the sidewalk, or sand, or stones. Have you

HOW CLIMATE AFFECTS THE CLOTHING PEOPLE WEAR

Amazon Rain Forest

The Sahara - Daytime

The Sahara - Nighttime

James Sawders—Combine

An oasis home made of sun-dried bricks. Can you see the palm trunks that hold up the flat roof?

walked with bare feet in the same places on a cold day? If so, you found that the grass was not so cold to your feet as the sand, stones, or sidewalk. Sand heats more easily than grass and cools more easily, too. Bogana can walk with bare feet in his jungle, day or night, the whole year round. But Jasim and Esmat must wear leather *sandals* to protect their feet from the burning sands.

Since dry air heats and cools more quickly than moist air, the dry desert air makes the temperature change quickly. It is very hot in the daytime, while the sun is shining, and very cool at night. People who have traveled in the Sahara have told about cooking an egg on a rock at noon. Early the next morning they found ice in a hollow of that same rock.

Now you know that the amount of moisture in the air is one of several things that affect temperature. Remember these two causes of temperature that you have learned: (1) distance from the equator; (2) the amount of moisture in the air. Later you will read about other things that affect temperature.

Clothing worn in the desert

The Arabs of the desert must wear clothes that cover their whole bodies, to protect them from the sun. They have no other shade. Their loose, flowing robes are usually made of cotton cloth. This cloth is often very thin. Even their heads are covered by squares of cloth, folded, and held in place by cords made

of camel's hair. The wool burnoose, worn over the cotton robes, keeps the Arab warm after the sun has set.

The Arabs weave their burnooses from the wool of their own sheep. They usually buy the cotton cloth at a bazaar, trading their wool or leather or animals or cheese for it. They seldom weave it.

Desert homes and oasis homes

The nomad Arabs live only in tents. These people are always on the move. They do not find building materials everywhere they go, as the people of the jungle do. Their "houses of hair" must be taken along with them. These tents are made of cloth woven from the hair of goats or camels. Some of the tents are very large and have many rooms. Others are small and have only one room.

The Arab tent is in several pieces. One large piece, made by sewing strips of cloth together, forms the top of the tent. Smaller pieces hang down on each side. Usually one side is raised for air, but it can be let down quickly if a sandstorm comes. Most of the tents are black. But sometimes strips of cloth of two different colors are sewed together to make a striped tent.

People who live at an oasis do not make their homes in tents. They mix earth with water and shape the mud into bricks. The bricks are then baked in the sun. Flat-topped houses are built with these bricks.

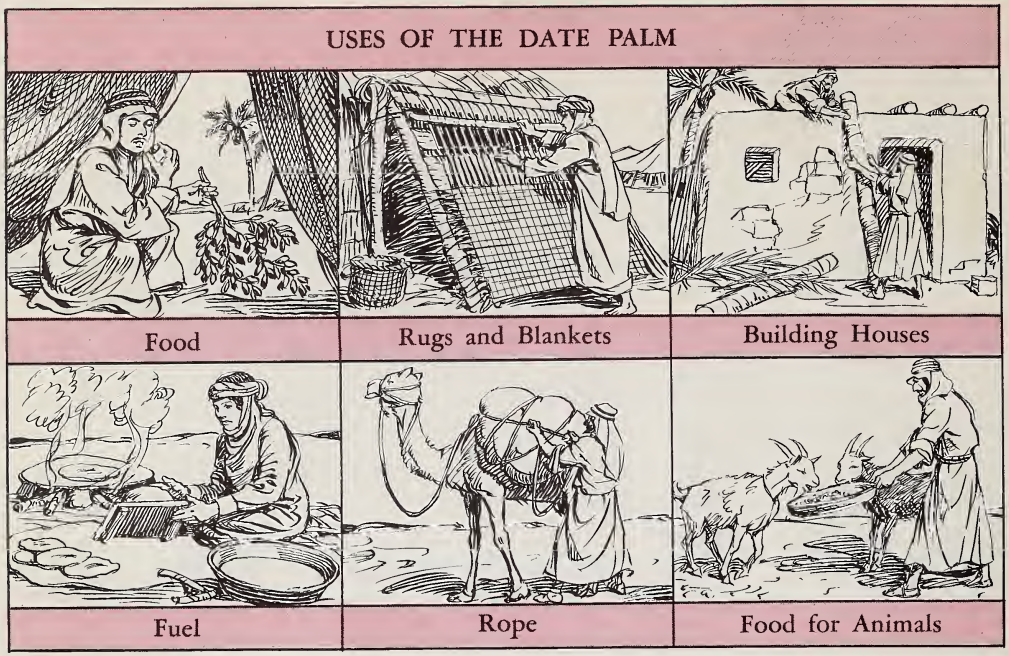
First the walls of a house are built. The outsides of the walls are covered with the mud, which soon dries in the sun. Then the trunks of palm trees are laid across the top of the walls. Palm leaves

A wool burnoose, worn over the cotton robes.

James Sawders—Combine

The top of a date palm, with bunches of dates.

Screen Traveler from Gendreau



are placed on the tree trunks, and the leaves are covered with mud. The mud dries into a hard, flat roof.

The roof is the porch of the house. Here the family sit in the evening to enjoy the cool night air. In summer they take their rugs to the roof and sleep there under the stars.

Why don't the oasis people need steep roofs on their houses, as the jungle people do? See the pictures on pages 72–73.

The use of land and water

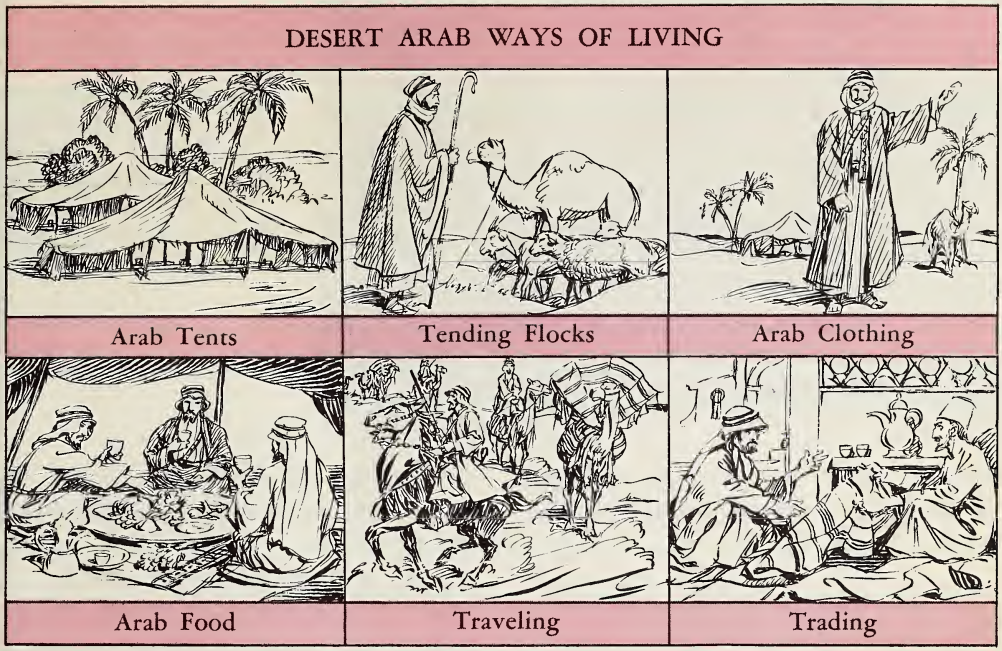
There are other differences between life on the desert and life at the oasis, besides the kind of homes.

The nomads do not own the lands that they use in the desert. There is not much pasture land on these sandy wastes; neither are there many people. So a tribe can usually have any spot of desert where there is feed for their flocks. If they go to a spot and find that the grass has been used, they move on to another place.

It is quite different at the oasis. Many people are eager to use the moist land and the water that makes it grow rich crops. So a man must buy the land he uses. He must also buy his right to use water from the spring, the well, or the stream.

Ditches are dug from the stream to the gardens and palm trees. Water can then be turned into these ditches. When men bring water to their crops in this way, we say they *irrigate* them. Water is turned into each man's ditches for just a certain length of time. The length of time depends on how much he pays for it. Guards watch to see that each man gets only his share of the water.

The sandy desert soil has in it every-



thing that is needed to make plants grow except moisture. When this soil is watered, it makes rich crops of fruit and vegetables. These crops grow very quickly under the warm sun.

Why the date palm is useful to the Arabs

The finest dates in the world are grown at the *oases* (ō ā′sēz). The date palm furnishes much of the food for both the nomad shepherds and the people who live around the oasis. The dried dates keep well, and they are rich in food value. Many of the dates are sold to people of other countries, too.

At the time of the date harvest a man or boy climbs to the top of a date palm. He cuts a bunch of dates and passes it down to another man who has climbed almost as high. This man passes the dates to the one below him. And so they keep passing the fruit from man to man, down the whole long trunk of the tree. When the dates reach the ground, they are dried in the hot sun. Then they are sorted carefully.

Many dates are put away for the family's use or for trading to the nomad shepherds. Others are packed in wooden boxes and carried on the backs of camels to the cities near the coast. From there they are shipped to other countries. Many of them come to the United States of America.

The date palm not only furnishes a very important desert food. It has many other uses. Palm leaves are used in weaving rugs, in building houses, and in many other ways. Very, very old trees are finally cut down for wood. Palm wood is used for the doors and roofs of Arab

This class of Arab boys is being held out in the hot sun. The pupils write on their white boards as they are taught the Koran. Notice how they are dressed.

Charles Phelps Cushing

houses. The few pieces of furniture that the Arabs have are also made from the wood of the date palm.

How Arab children learn their lessons

The children of the nomad shepherds do not go to school. Their fathers and mothers teach them what they must know in order to get along on the desert. These children listen to their fathers and mothers as they repeat parts of the *Koran* (kō răn′). The Koran is their Bible, or book of holy writings. The children learn these parts of the Koran, too, by saying them over and over after their parents.

Many exciting stories are told in the tents. In a book called "The Arabian Nights" you may read stories somewhat like those to which Esmat and Jasim listen. The Arabs love music, too. They make up songs, and they play and sing beneath the stars. As the children listen to the stories and the music, they too learn them.

Some of the boys in the larger oasis towns go to school. Sometimes a few girls

Screen Traveler from Gendreau

An Arab storyteller can usually gather a group of listeners. This Arab of northern Africa is telling a story in a public place. Arabs enjoy good stories.

The sun is the only guide these travelers have as they and their camels cross the sandy desert. How would you like to travel across this sandy desert?

James Sawders—Combine

go too, but not often. The teacher of the school sits on a raised platform in the middle of the room. The pupils sit around him. They, too, study the Koran. They also learn to read and write. Instead of blackboards they use "white boards." Each pupil has a small white board on which he writes with ink that can be easily washed off.

Finding one's way across the desert

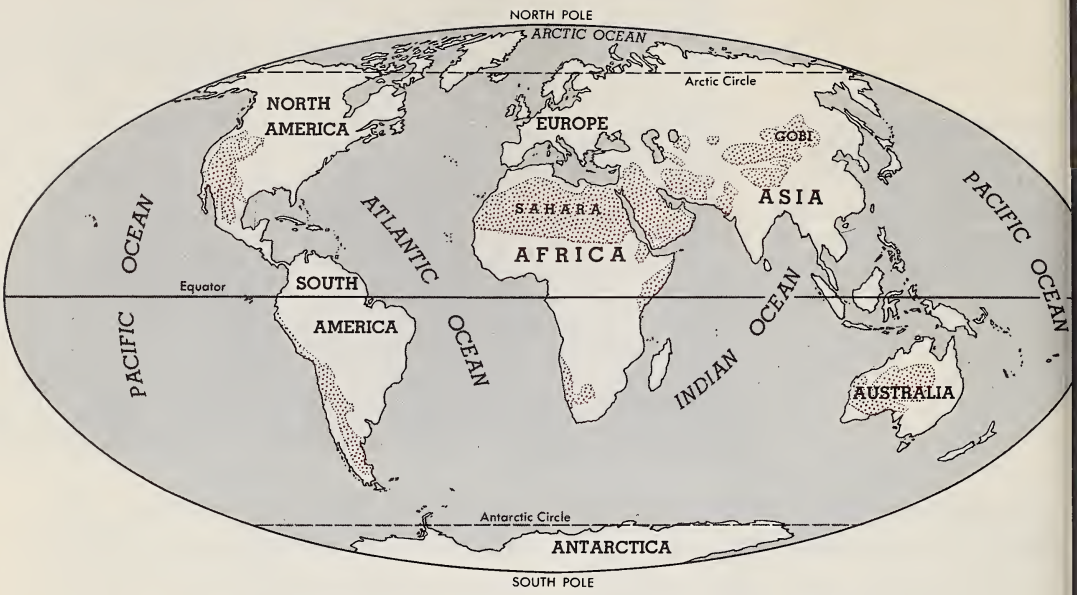
In some parts of the Sahara there are rocks and mountains. These mark the way for travelers. But in other parts there are miles and miles and miles of sand—nothing but sand.

Although the sand is piled in drifted hills, or sand dunes, these dunes cannot be used to mark a trail. The wind is forever blowing them into different shapes and sizes. And the sand quickly covers the marks of passing feet. So no trail across these parts of the desert ever lasts very long.

On the sandy stretches of the Sahara the only guides are the sun by day and the stars by night. The Arab traveler

Wolff from Monkmeyer

This Arab policeman of the Sahara is guarding a caravan route. He is on the lookout for robbers and other dangerous men. Do you think he likes his job?



Here is a map that shows the main desert areas of the world. Which desert is the largest? In what part of the United States is there a large desert? Are there any deserts in Europe? Find the equator and the two poles. Find the Arctic Circle and the Antarctic Circle.

looks to the sky for his road signs. He has no printed signs and no highways.

Robbers in the Sahara

The hot, dry climate and the difficult ways of travel keep many travelers away from the Sahara. But even more travelers have been kept away by the robbers. Bands of robbers sometimes hide behind desert rocks or sand dunes. When lonely caravans pass, these robbers attack them and take their goods.

However, there are not so many robbers in the Sahara as there used to be. Policemen on camels now guard many of the caravan routes. They help greatly in keeping robbers away. When there are no more robbers in the land, more people will visit it. It would be fine if everybody knew what Jasim learned: that things taken in dishonest ways never bring real happiness. Have you learned this too?

Air travel in the desert

Now that airplanes are widely used, more travelers can visit the Sahara than ever before. Once a trip from New York to this great desert took many weeks. Now an airplane covers the distance in little more than a day. Once the only way to travel in the desert was by caravan. Now there are both automobile roads and *airports* in some parts of the Sahara. Airports are landing fields where airplanes may load and unload.

This means that the Arabs and the other peoples of the world are beginning to get better acquainted. Air travel has already brought about changes in the way of living in some parts of the desert.

OTHER DESERT PEOPLE

The Arabs of the desert, as you know, belong to the white-skinned peoples. However, there are other nomad shepherds in the Sahara who are somewhat like the Negro peoples. They live in much the same way that Esmat and Jasim do.

There are many deserts in the world besides the Sahara. The map on page 136 will show you where the deserts of the world are. You can see from this map that we have some deserts in our own country.

In one of the deserts of our country people have learned to grow very fine dates. This desert is about the same distance from the equator as the oasis of Nefta in the Sahara. The first date palms that grew on this desert were brought from the oasis in which Nefta is located.

The nomads of the Gobi

On the map on page 136 find the Gobi (gō′bē), a desert in Asia. Unlike the Sahara, this great desert has very little sand. Most of it is solid rock, covered with a thin layer of small stones.

Much of the surface of the Gobi is fairly smooth. Automobiles can travel

The left-hand picture shows a desert in our own state of New Mexico. Notice the small plants and the formations that look like tables. The right-hand picture shows a date orchard in California.

James Sawders—Combine

Godsey from Monkmeyer

American Museum of Natural History

Beside the Mongol yurt in the top picture is a fenced-in place where sheep and goats are kept. The second picture of the Gobi shows a Mongol putting up his cloth-covered yurt.

This Mongol father and son of the Gobi are on their ponies, ready to ride into the desert.

American Museum of Natural History

over it in many places. Such travel is rough, and sometimes the car gets stuck where sand has drifted over the rock. Then men and camels must pull it out again. Even so, a trip by car is very much faster and more comfortable than a trip by camel. And camels offer the only other way of crossing the dry desert.

The great Gobi is something like a huge, deep pan, with higher land forming its rim. In the spring the nomads of the Gobi usually move into the mountains at the edge of the desert. There plenty of grass can be found for the herds of sheep, goats, cattle, horses, and camels. In winter the nomads move back to the rocky desert floor. The terrible cold is not quite so bad on the desert as it is in the mountains. The nomads of the Gobi are called Mongols (mŏng′gŏlz).

It is easy for the Mongols to move their *yurts* (yo͝orts), or tent-like houses. The yurts do not look like the hair tents used by Jasim's people. They have a round framework of wood, covered with layers of warm wool cloth.

Yurts can be taken down and put up again as easily as American circus tents. A yurt can be set up in about twenty minutes. So it isn't taking his home along that makes the spring moving hard for the nomad boy, Tserin (tsûr′ēn). It is the snow and the terrible cold.

Like other Mongol boys, Tserin must help keep the herds together on the trip. Mounted on his pony, he rides through the snow all day, keeping the calves and kids and lambs from wandering away. The baby camels cannot stand this cold march, so each one is strapped to the top of its mother's load.

Most nomad boys of the Gobi learn to ride by the time they are four years old. So did Tserin. By the time he was five, he was herding sheep and goats. Now a boy of nine, he leaves that work to younger children, except at moving time. He spends his days caring for the ponies and camels.

Tserin does not really mind the hard spring moving. He is glad to go to the lower mountainsides where the green grass grows. Sometimes he even goes higher up, where there are trees. It is cooler there in the short, hot summer.

Almost everywhere the *gazelle* (gȧ zĕl′) may be seen. Tserin likes nothing better than to watch these swift, beautiful animals. They are much like deer and can run at sixty miles an hour.

Tserin has often tried to catch a baby gazelle but has never succeeded. Usually the little gazelle sees Tserin first. This young animal has a way of hiding, even on the open desert. It lies flat on the ground beside a desert bush only a few inches high. It drops its ears, stretches out its neck, and lies very still. Because the gazelle is almost the same color as the desert rocks, it can hardly be seen.

Sometimes Tserin does see the gazelle, for a desert boy's eyes are keen. Then he tries to slip up and throw his sheepskin coat over the animal. But just as he is ready, the gazelle leaps up and dashes away, with speed like the wind!

Every Mongol boy has his own pony. He rides almost everywhere he goes. Yet on the Sahara, where Jasim lives, only the sheik rides a horse. Why is it easier to have horses or ponies on the Gobi than it is on the Sahara?

American Museum of Natural History

The picture at the top shows another Mongol of the Gobi on his pony. In the next picture you can see what the inside of a Mongol yurt looks like. Notice the stove in the center.

The picture below shows a Mongol priest in front of his yurt. He is camped on the desert.

American Museum of Natural History

These maps of the Northern and Southern Hemispheres show the Tropic of Cancer and the Tropic of Capricorn. They are make-believe lines that show where the midday sun is directly overhead just one day each year. Which of these lines goes through the Sahara? Does one of these lines pass through the United States? Where is the equator on these globes? Where are the poles?

TWO MORE LINES ON THE GLOBE

You will remember that the *midday,* or noontime, sun at the equator is almost directly overhead all the year round. As one moves north or south from the equator, the midday sun is lower and lower in the sky. And there are fewer and fewer days when the midday sun is directly overhead. At a certain distance from the equator, either north or south, the midday sun is directly overhead only one day each year.

On maps and globes this distance from the equator is shown by two lines. One line is drawn a certain distance north of the equator, all around the globe. It is called the *Tropic of Cancer.* The other line is drawn around the globe at the same distance south of the equator. It is called the *Tropic of Capricorn.*

Find these two lines on the globes on this page. Which of these lines passes through the Sahara? Which line passes through South America, Africa, and Australia? Which line passes through North America, Africa, and Asia?

Be sure to remember that there are no such lines as these on the earth itself. They are just lines on globes or maps showing how far north or south of the equator the midday sun is directly overhead once each year.

As one goes from the Tropic of Cancer toward the North Pole, the sun is never directly overhead. The same is true in

going from the Tropic of Capricorn toward the South Pole. The sun's rays become more and more slanting as one moves north or south. At the poles the sun's rays are so slanting that they cannot be seen at all for about six months.

In what part of the sky may the midday sun be seen at your home in summer? What change takes place as winter comes? Try looking at the midday sun during each season (spring, summer, fall, and winter) to see how its position changes. What does the position of the midday sun have to do with the temperature?

WONDERFUL WATER

We have seen that the bare, dead desert comes alive when it is watered. We know there is a cool, green, food-giving oasis wherever water keeps the earth moist. And at most of the oases there are people. The people are anxious to make their living by farming the rich, moist earth.

Some of the oases in the Sahara are so small that they are watered by a single well or spring. Others, with a better water supply, are so large that they furnish food for a whole city.

The largest oasis in the whole world

There is one oasis that is far larger than any other on the earth. It supports the people of the whole country called Egypt. The entire country of Egypt would be a

Sailboats carrying cargo on the Nile River near its mouths. Notice the modern city buildings.

Screen Traveler from Gendreau

waste of desert sand if it were not for the Nile River. The oasis made by the Nile lies across the eastern end of the Sahara. Find this great river on the map on page 143.

Travelers in the Sahara have been surprised to see in the distance a pointed sail moving between the sand dunes. It seemed as though a boat must be sailing across the desert sands. Coming at last to the top of a hill, they could see that there really was a boat. But it was not sailing in the sand. Instead, it was floating on the waters of the Nile River.

On each side of this river is a narrow strip of the greenest, richest farm land one could ever find. The fields look like a long piece of bright green ribbon stretched across the dry desert sands. This long strip of oasis, made by the Nile River, is about eight hundred miles long. In some places the oasis is so narrow that you could throw a rock across it. In other places it is fifteen miles wide. The width at any point depends on how much earth is watered by the Nile at that point.

Why the Nile is never dry

Sometimes it does not rain in Egypt for a whole year. How can there be such a great river in a part of the world that has so little rain? To answer that question, we must look for the *source* of the Nile. The source of a river is the place where it begins.

A big river is usually formed by many smaller streams which run into it. Each of these smaller streams is called a *tributary*. The Nile has two main tributaries —the White Nile and the Blue Nile. Both of these tributaries start in the high mountains of central Africa, south of the Sahara.

This canal from the Nile irrigates the cotton fields on the right and the date palms on both sides.

Ewing Galloway

Here is a map of the entire Nile River, from its sources in the mountains to its mouths at the Mediterranean. Notice the large delta formed by these mouths. In what country is this delta? Find the two main tributaries of the Nile. What sea forms the eastern border of the Sahara? What two make-believe lines appear on this map?

In these mountains there is a great deal of rain. It rains there almost every day, even during the dry season. During the rainy season a great amount of rain falls. The earth cannot soak up all the water that falls. Much of it collects in lakes or runs down the sides of the mountains in streams.

Look at the map on this page. You will see that the White Nile and the Blue Nile flow north. They run together and make the great Nile River. It is one of the longest rivers in the world.

The fertile soil along the Nile River

The Nile not only brings the wonderful, life-giving water; it brings another gift, too. It brings plant food to add to the already rich desert earth.

How does the Nile bring plant food? Once each year, during the rainy season in the mountains at its source, the Nile overflows its banks. For weeks a strip of land on each side of the river is covered with its muddy waters.

When the water has finally drained off, a layer of mud is left. This mud contains much plant food. It makes the rich Sahara earth still more *fertile,* or rich. It is no wonder that for thousands of years people have farmed this fertile land.

Screen Traveler from Gendreau

This is a street in the capital and largest city of Egypt. Notice the modern buildings and cars.

Not all the mud that the Nile brings down from the mountains is left on the flooded land. As its waters flow north into the Mediterranean Sea, they bring a great deal of mud to its mouth. Year after year this mud piles up in the Mediterranean at the river's mouth, making new land. Land that is formed at the mouth of a river in this way is called a *delta*.

The delta at the mouth of the Nile is a large piece of land shaped like a fan. Long ago the delta blocked the old mouth of the river, and the water was divided. Now there are a number of smaller mouths. Through these different mouths the waters of the Nile continue to empty into the sea. Find the Nile delta on the map on page 143. It is in northern Egypt.

Many of the people of Egypt farm the fertile soil of the Nile delta. There are several cities on the delta, too. Ships from all over the world come to the mouth of the Nile to trade.

Ways of living in the land of Egypt

In the cities of Egypt many people live and work and dress much like the people of Nefta. But some sections of the cities have been built by people from other parts of the world. They have brought their own customs with them.

Some of the newer parts of the cities are quite modern. The buildings are made of materials brought from other countries. Water is piped to the homes. The people dress as we do in the United States

of America. But in the older parts of the cities and towns people still wear their more comfortable flowing robes. They buy water from the men who carry it from door to door in goatskin bags. And they live in their flat-topped houses of sun-dried bricks.

Life in the villages and on the farms is still much the same as it was hundreds of years ago. Many people still tend their farms in the same ways.

Long, long ago the Egyptian farmers learned to make their fertile fields grow more than one crop during the year. They do this by irrigating the land during the "low Nile," or the dry season of the year. Great dams have been built to hold the waters that rush down during the "high Nile," or flood time. The big lakes formed by these dams furnish water for irrigating when the river is low.

Since Egypt is not very far from the equator, the climate is warm enough to grow crops the year round. The farmers grow dates and other fruits and vegetables similar to those grown in the smaller Sahara oases. They grow much grain, too. But the crop that brings them more money than any other is cotton. The finest cotton in the world grows in Egypt. Most of it is sold to people of other countries. The farmers along the Nile also sell a great many onions to people of other lands.

Harvesting wheat in the old ways near the pyramids, which were built thousands of years ago.

Ewing Galloway

Charles Phelps Cushing

This blindfolded camel in Egypt is going round and round a water wheel, pumping water for the irrigation of crops. Is a camel a good animal for this kind of work? Why do you think he needs to have his eyes covered?

Camels, sheep, goats, and donkeys are used in Egypt. People in this great oasis also have another animal that is very useful to them. It is the *water buffalo*. This animal does not mind working in the wet, muddy, flooded fields. He loves the water. Why did we see no water buffalo at the home of Jasim and Esmat?

Learning to use the gifts of nature

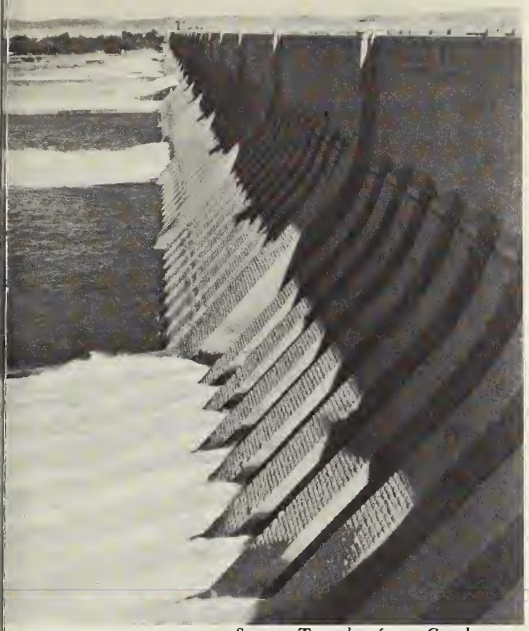
The rich oasis that supports the people of Egypt is indeed "the gift of the Nile." It is nature that brings the wonderful, life-giving water. It is nature that brings the rich mud each year at flood time. Yet men have learned to control this gift of water and of plant food. They now make the land produce many times as much food as it used to. No longer is there too much water at flood time and not enough the rest of the year.

By building dams and digging irrigation ditches, people have made the water last all year round. Now several crops can be raised each year. The irrigation ditches also take water to parts of the land that the flood might not reach. In this way the oasis has been made bigger. And thus it gives a living to more people.

In almost all parts of the world men are finding ways to multiply nature's gifts and to improve natural conditions. The control of water has added a great deal to people's comfort and has helped them in making a living.

Charles Phelps Cushing

Here are two Egyptians raising water from an irrigation ditch by turning the crank of a water screw. This is one of the oldest methods of irrigation in Egypt. In the background you can see the pyramids.



Screen Traveler from Gendreau

SCS from Monkmeyer

THE CONTROL OF WATER

The huge Nile dam above holds back the water until it is needed for irrigation. On the right is a potato field in our own country, watered by irrigation ditches. Below on the left is a water wheel in China. Flowing water turns the wheel and lifts water almost to the top. This flows down to the fields. On the right is a windmill in the Netherlands, used to keep the land dry.

Charles Phelps Cushing

Screen Traveler from Gendreau

BEING YOUR OWN MAP MAKER

Use the maps on pages 110, 111, 136, 140, and 143 to see where to put these things:

Print the names of Egypt, the Sahara, and the Gobi on your globe. Draw the Tropic of Cancer, the Tropic of Capricorn, and the Nile River on it.

Make dots on your globe for the homes of Jasim and Esmat and of Tserin, the young Mongol. Put Nefta on your globe, too.

TO SEE IF YOU ARE GETTING FACTS

Below are ten sentences. Write the numbers of the sentences on a sheet of paper, one under the other.

Choose the group of words that finishes each sentence correctly. Write the letter of that group of words after the number of the sentence, like this: **11. b.** Do not write in this book.

1. The most useful animal on the desert is: (a) the water buffalo, (b) the sheep, (c) the camel.
2. The Sahara is caused by: (a) too much sand, (b) the hot sun, (c) lack of water.
3. Arab shepherds live in tents because: (a) they don't like houses, (b) the tents are free, (c) they have to move often.
4. The houses at a desert oasis do not have steep roofs because: (a) there is so little rain, (b) flat roofs are prettier, (c) animals are kept on the roofs.
5. Not many people visit the Sahara because of the robbers and because: (a) people do not know about the Sahara, (b) travel is difficult there, (c) it is far away.
6. The most useful tree in the Sahara is: (a) the date palm, (b) the cactus, (c) the orange.
7. People find their way across the desert by looking at the (a) road signs, (b) marked trails, (c) sky.
8. The Sahara is: (a) the only hot desert in the world, (b) the largest hot desert in the world, (c) a large desert in the western part of our country.
9. One reason why the desert temperature drops quickly at night is that: (a) there is much moisture in the air, (b) the air is very hot, (c) the air is very dry.
10. The Amazon rain forests are cooler than the Sahara desert because: (a) they are closer to the equator, (b) there is more shade and more moisture there, (c) the sun's rays are more direct.

A PICTURE BORDER

Make a border of pictures for the walls of your classroom. Let the pictures show the different ways in which people get their water supply in different parts of the world.

Plan the border together and choose a different committee to make a picture or pictures for each of the regions you choose. Select a chairman who will be at the head of the whole plan and will work with all the committees. Be sure to measure your wall space and to figure the size each picture should be.

REASONING WITH FACTS YOU KNOW

Some of the five sentences below are true. Some are false. The facts you have learned should help you to reason as to whether a sentence is true or false.

First write the numbers of the sentences below on a sheet of paper, one under the other. After the number of each sentence write the word "Yes" if the sentence is true, or "No" if the sentence is false. Do not write in this book.

1. Men must always use the gifts of nature just as they are, without changing them.
2. Men can improve their ways of using the

gifts of nature so that these gifts become much more helpful.

3. Men can live for a long time where they can get no water.
4. Everywhere on our earth there is enough water for people, animals, and plants.
5. Men have learned how to bring water into some places where there is not enough.

After you have finished the sentences above, talk them over together. Tell what facts made you know that certain statements are true and certain statements are false.

A WORD PUZZLE

Write the numbers of the words below on a sheet of paper, one under the other. After the number of each word, write the letter of the meaning which fits that word.

1. note	8. barley	15. irrigate
2. delta	9. fertile	16. burnoose
3. sheik	10. desert	17. gazelle
4. yurt	11. bazaar	18. tributary
5. Allah	12. nomads	19. couscous
6. dune	13. source	20. caravan
7. Koran	14. bargain	21. silversmith

a. A kind of robe
b. An area where few plants can grow
c. A pile of sand formed by the wind
d. Land formed at the mouth of a river by mud that is brought down by the water
e. People who wander from place to place, taking their things with them
f. The Arab word for God
g. Rich in plant food
h. To water land so it will grow better crops
i. A stream or river whose waters help to form a larger river
j. A piece of paper money
k. A kind of grain
l. A swift, beautiful, deer-like animal
m. A group of shops in a town
n. A tent-like house of the Gobi
o. An Arabian dish of meat and vegetables
p. The Arabs' Bible
q. A person who makes things of silver
r. The leader of an Arab tribe
s. A group traveling together in the desert
t. A good or poor trade
u. The beginning of a stream or river

MORE ABOUT DIRECTIONS ON A MAP

You have learned to find the four main directions: **north, south, east,** and **west.** Do you know the in-between directions, too? They are **northeast, southeast, northwest,** and **southwest.** Look at the sign on the map on page 111. The line marked **NE** stands for **northeast.** It is halfway between north and east. Between what two main directions do you find **southeast (SE)? Southwest (SW)? Northwest (NW)?**

On a separate sheet of paper, draw a direction sign like the one on page 111. Write **N, S, E,** and **W** to show the four main directions. Write **NE, SE, NW,** and **SW** to show the in-between directions.

Now look at the map on page 136. What continent is northeast of Africa? What continent is northwest of Africa? What continent is southeast of the Sahara? What continent is southwest of the Sahara?

Turn back to your map of the United States on pages 24–25. In what direction is the state of Washington from Texas? In what direction is Arkansas from Maine? In what direction is Florida from Montana? In what direction is Minnesota from Arizona? In what direction is southern California from North Dakota?

A MATCHING GAME

On your paper write these words, one under another: **goatskin, franc, sandal, churn, camel's hair, pottery, reed, dye.** After each word write the one in the following list that goes best with it: **shoe, fine cloth, coloring, grass, bag, butter, money, clay.**

Rosita and Tito are an Indian girl and boy who live in a small stone house in the high Andes. They are combing their silver-white llama, Tomaso, and planning what they will do at the fair.

Where Tall Mountains Tower

You have read about an Indian boy and girl who live on the continent of South America. Now you will read about three Indian children on the same continent. Tito (tē′tō) and Rosita (rō zē′tä) and their neighbor Manuel (män wĕl′) live high in the mountains of Peru. Their home is almost three miles above the level of the Pacific Ocean. The mountains of Peru are part of the great Andes.

We measure the height of mountains from *sea level.* This means their height above the sea. In the same way we measure the height of an airplane in the air. The height of anything above sea level is called its *altitude.* The altitude of Tito's and Rosita's mountain home is about 14,000 feet.

Their home is almost as close to the equator as Bogana's home in the hot rain forest. Find these two homes on the map on page 152 and see how near the equator Tito and Rosita live. What does this tell about the way the sun shines there?

It is true that the sun's rays are direct and hot as they shine upon this little home in Peru. Yet it is never very warm there, not even in summer. That is because of the high altitude.

The higher up one goes above sea level, the cooler he finds the air to be. Airplane pilots will tell you that when they fly high above the earth they find the air very cold indeed. High mountains often have snow upon their tops, even though it may be quite hot in the lowlands at their feet.

So we find that it is cold in this high mountain home, though it is not far from the equator. There is no thick rain forest around the house. In fact there are no trees at all, although there is plenty of rain. As you read this story, see what you can learn about ways of living at such a high altitude.

This globe shows where Tito and Rosita live in the Andes Mountains of Peru. It also shows the home of Wana and Bogana in the Amazon rain forest. On what continent are these two homes? Notice how near the equator both of them are. Which home is closer to the equator? Which home is warmer? Find an air line which crosses the rain forest and the Andes.

THE SILVER-WHITE LLAMA

As Tito climbed up the steep, narrow trail toward his home, he sang in a gay voice.

"Just two more weeks," he thought, "until the *fair.*" Tito and all his family felt that a trip to the fair was quite the nicest thing that ever happened. This year the fair would be more fun than ever before. Tomaso (tō mä′sō), Tito's pet *llama* (lä′mȧ), would be entered, in the hope that he might win the prize.

Tito didn't doubt that Tomaso would win the prize. Surely there was no other llama that was so strong and beautiful or that walked with such grace and pride. Already Tito was planning how he would spend the prize money. He meant, of course, to share the prize with his sister Rosita. Had she not helped him to care for Tomaso since the llama was a little, long-legged baby animal?

Carrying tola brush up the steep mountain

Tito hurried faster, in spite of the heavy load of *tola* (tō′lä) bushes that he carried on his back. He had been sent down the mountain that day to gather tola brush. It was needed to keep the fire going in his mountain home. The house was high above the *tree line,* where no trees could grow. So there was no wood near by for warming the hut on very cold evenings. And there was none

to burn in the stove, made of stones, which Tito's mother used for cooking. Tola bushes made the best *fuel,* or material for burning. They grow higher up on the mountains than any trees.

Tito had so much tola on his back that he looked like a walking brush pile. The tola was heavy, too. But the boy was not thinking about that as he hurried up the steep trail. He was thinking of Tomaso and wondering if Rosita had brought the animals in from the pasture yet.

Usually it was Tito who took the llamas, *alpacas,* and sheep out to eat grass on the mountainside. But today he had had to go for the tola brush. So Rosita had been sent to watch the flocks in his place. An alpaca is a kind of llama.

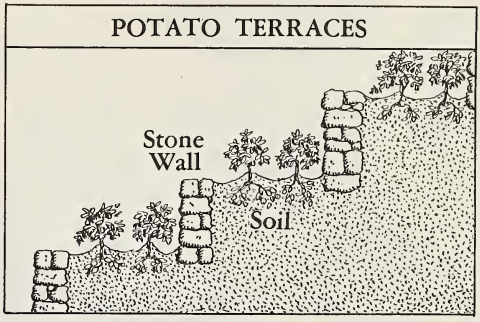
Tito was not far from his home, but he could not yet see it. The path wound back and forth up the steep mountainside, and huge rocks cut off his view. A few more turns, and the house would be in sight. Then he would be able to see whether Tomaso was back from the pasture.

"I wonder if Tomaso missed me today," he thought. He smiled to himself as he saw in his mind that young, proud white llama. How he loved Tomaso!

Though he wanted to hurry, Tito had to slow his steps a little as he climbed on up the trail. At this high altitude the air is very thin. If a person hurries too fast, he finds it hard to breathe.

Stopping to rest on a potato terrace

Already Tito had hurried too fast. When he came to the potato patches, he sat down on the edge of a *terrace* to catch his breath. As he rested, he looked with pleasure at the strong stone edge of the terrace. He had helped Father to make this wall which now held up a patch of soil.



This is what potato terraces would look like if you could cut right through them from the top.

Potatoes are the only food crop that will grow where the air is so thin and cold. And there is very little soil in which to grow potatoes. The rains wash the soil down off the steep mountainsides, leaving only the bare rocks.

When the Indians find a small patch of soil, they build a stone wall around the lower side of it. This keeps the soil from washing away. To make the steep field more nearly level, they throw soil onto the low side, next to the wall. These small fields are called terraces.

The potato terraces of Peru are the highest farm lands in the world. It was here that potatoes first grew. We know this vegetable as the *Irish potato,* but it grew in Peru long before it was carried to Ireland.

When Tito had rested a little while, he again took up his load of tola brush and began to climb. At last the trail led around a big rock, and Tito saw his home. It was a small house, made of stones fitted

Tito took some of the tola brush in to his mother. She was trying to cook potatoes on the stove.

together. It looked smaller still against the side of the huge mountain.

High above the house, as far as one could see in almost every direction, were dozens of snow-covered peaks. These peaks were part of the great *range* of mountains called the Andes. The setting sun gave a rose-colored glow to the shining white caps of snow. Above them the sky was a deep, bright blue. It was indeed a beautiful scene.

Looking for Rosita and the llama Tomaso

Tito loved the great mountains, and he never tired of watching their changing colors. But right now he had eyes for only one thing. He was looking for Tomaso. He looked up at the little stone house with its thatched roof of yellow straw. There was no sign of Tomaso, or of the other animals, or of Rosita.

Tito reached the house and put down his load of tola brush. He took some of it in to his mother. She was trying to make a fire burn under a pot of potatoes that she had put on to boil.

"Where is Rosita?" he asked. "The animals are not in the *corral.*" A corral (kŏ răl′) is a pen, or fenced-in place, where animals are kept.

"I don't know." Mother looked a little worried as she answered. "She should be back from the pasture by now. Go and look for her, Tito."

Tito hurried out and down the mountain. He didn't know just where to look for Rosita. The grass that grew at this altitude was coarse and scarce. Anyone who took animals to pasture must let

them wander over a great deal of the mountainside in one day.

The warm sun had now gone behind the mountain peaks. Without the heat from its rays, the high, thin air grew very cold. But Tito's *poncho* (pŏn′chō), woven of llama wool, was quite warm. It looked like a little blanket with a hole in the center for his head to go through. The rocky trail was cold to his bare feet, even though their soles were thick from going barefoot so much.

How Tito's sister broke her promise

Tito had not gone far before he saw the llamas and other animals coming up the mountain trail. They were followed by Rosita, who was crying bitterly. At once Tito guessed the cause of her crying. His quick eye saw that in the long line of llamas walking so lightly and proudly up the trail, Tomaso was missing.

"Where is he, Rosita?" Tito grabbed her arm and shook it a little, for she would not stop crying long enough to answer him. "Where is he?"

"I don't know," she said. "That is why I am so late in coming. I have looked and looked."

"Oh, Rosita! I told you never to lose sight of the animals. And you promised not to!"

Rosita burst into louder crying. It was true. She had promised. How could she know that so much might happen if she stopped watching for just a few minutes?

"Hush!" scolded Tito. "It does no good to cry now. Tell me, when did you last see Tomaso?"

Snow-capped peaks in the Andes of Peru. The clouds seem to be resting on these high mountains.

James Sawders—Combine

"It was just after I ate my meal of *chuño.*" Chuño (chōōn'yō) is potato that has been frozen and dried. "The animals had found a good patch of grass. So I sat down and tried to knit something out of thread I had been spinning as I walked. I wanted to knit a little doll to sell at the fair. I kept an eye on the animals to see where they were going, and I followed them very soon. But Tomaso was missing."

"Then he has been gone from the flock the whole afternoon," cried Tito. "Where were you, Rosita, when you stopped to eat your lunch?"

"Just a little way above the house of the *gringo,*" the girl answered. "You know the gringo?" *Gringo* (grĭng'gō) is a word Rosita's people often use for someone from the United States. It means *foreigner,* or a person from another country.

"Yes, I know him—the gringo who has come to paint pictures of our mountains. But he cannot climb even the lower ones without getting mountain sickness." Tito smiled, in spite of his worry, when he thought of this pale-faced *artist* and his weak stomach.

Rosita defended the artist. "Almost all people get mountain sickness when they climb so high for the first time. Even our own people who come up from the valleys get it. Manuel says that the gringo's hand is like magic, for the pictures he paints seem almost alive."

"That Manuel!" exclaimed Tito. "Pay no attention to him, or to his talk about the gringo, either. He cannot be depended upon. See, the animals are waiting at the corral. Go to them, and I will go to the pasture and look for Tomaso."

An Indian girl of the high Andes and her llama.

James Sawders—Combine

Rosita's shame and Tito's sorrow

Still crying quietly, Rosita climbed the steep trail to the little stone house. She opened the gate to the corral, which was a sort of yard with a stone fence around it. Rosita followed the animals into the corral, closed the gate, and went on into the house.

A supper of dried meat and boiled potatoes was waiting on the stone stove. But even the good smell of the food could not cheer Rosita. She was thinking of Tito, hunting Tomaso in the growing darkness—and of her broken promise. Why, oh, why had she not watched the animals more closely?

Mother was worried, too. She kept going to the door to look down the trail, for it was fast growing dark.

It was very dark and everyone was in bed when Tito returned. Tired, cold, hungry, and cross, he answered Rosita with few words: "No. No Tomaso. He is gone."

Rosita thought she could hear Tito crying, too, as he lay rolled in his blankets in the corner. She wanted to go to him and comfort him. But she was too much ashamed of her own part in his sorrow.

The next morning Tito was up before anybody else and out in the mountains. Surely, now that daylight had come, he could find Tomaso. It was not like his pet llama to have wandered far.

Mother spoke rather sharply to Rosita and again sent her to watch the flock. All day she followed the animals, her *spindle* in her hand. She was spinning as she walked, as the Indian women of Peru do. But she never lost sight of the sheep, the llamas, and the alpacas. If only she had been as careful yesterday!

The whole day of searching came to nothing. Tito did not find Tomaso. A cold feeling grew between Tito and his sister. It hurt the girl deeply. But what could she do about it now?

How Tito and Rosita had planned for the fair

For weeks she and Tito had talked of nothing but the fair. Every evening Rosita had sat on a stone in the corral while Tito combed and combed Tomaso's long silver hair. How they had planned together!

Over and over Tito had said, "Father has promised us a few *centavos* to spend at the fair, Rosita." A centavo (sĕn tä'vō) is a coin worth less than a cent. "Mine shall not go for sweets, or boiled corn, or even an orange. I shall buy some gay ribbons to tie into Tomaso's ears."

Ewing Galloway

Indian women of Peru spinning some wool yarn.

"Silk ribbons, Tito! Ah, but he will look grand. You may have my centavos for ribbons also."

"No, Rosita. You must have an orange. My centavos will be enough."

Rosita had never tasted an orange. She would listen while Tito told about the oranges and other strange fruits and vegetables sold at the fair. They were brought up from the *lowlands* at the foot of the mountains.

Now these happy evenings of planning together were no more. Rosita still sat on the stone and watched Tito as he put the animals in the corral for the night.

Ewing Galloway

Llamas carrying small but heavy bags of copper ore from a rich mine in the Andes of Peru.

But neither of them talked at all. What was there to say, since the llama Tomaso could not be found anywhere?

The copper mine where Father worked

Day by day the time for the fair came nearer. Soon Father would be coming home to go with them to the fair. He worked at a copper mine, still higher up in the Andes.

Only llamas could climb the steep, rocky trails to the mines and take the copper *ore* down to the railroad. Some men from the United States had built this railroad to carry the valuable metal down to the Pacific coast. From there it was shipped to other parts of the world.

Up at the mine the air was very, very thin. It was hard for men to go there without getting mountain sickness. But day after day Father drove the llamas, in single file, back and forth from the mine to the railroad. The men who owned the mines would let him come home for the fair, though. They always did.

Rosita's visit to the artist's house

The fair was only one day away when Mother sent Rosita to carry a chicken to the artist.

Manuel, the young neighbor, had found himself a fine job working in the artist's house. And Manuel had come to Rosita's home the day before in search of a chicken. He said that the artist wanted a chicken to eat and would pay well for it. The thin, half-wild chickens were hard to catch. Mother had promised that she would get hold of one of them that night after they had gone to sleep. Rosita

would take it to the artist on the following morning.

Rosita felt almost happy again when she set out that morning down the steep trail around the mountain. She had the chicken under her arm. Mother had let her put on her *fiesta* (fyĕs'tä), or holiday, clothes. Her long, full blue skirt was woven with a design of orange and green. A bright yellow shawl was tied around her shoulders. On her head she wore a big black hat, shaped like a pancake and lined with red. Beneath the hat her long black hair hung in two smooth braids.

The trail was so narrow, steep, and rocky that you or I would have found it difficult to travel. But Rosita, with the thin chicken under her arm, walked along as easily as Tomaso would have done. And the llama is more sure-footed than any other animal.

Soon Rosita came in sight of the artist's house, which was much like her own. It belonged to Manuel's father, who had let the artist use it during his stay in the mountains. The house was made of stone, with a roof of thatched straw. There were no windows, and there was only a low opening for a door.

Manuel had said that the artist was always wanting more air in the house. More air! Was it not hard enough to find tola brush to warm the air that came in through the door? Strange people, these gringos!

Rosita was met at the door by a fat Indian woman, who cooked for the artist. The woman took the chicken. Then she and Rosita began to argue about the price of it. They sounded angry, but they really were not. It is a custom among the Indians of Peru to argue about prices.

The artist's request to paint Rosita's picture

Just as Rosita and the woman agreed on a price, the artist appeared. He was on his way out, and he had his paints with

A copper-mining town in the Andes of Peru. The entrance to the mine is shown at the left.

James Sawders—Combine

him. When he saw Rosita, he stopped. Here was the prettiest little Indian girl he had seen since he came to Peru. With her colorful fiesta clothes and pancake hat she was exactly the picture he wanted to paint.

Rosita had never seen a white man before. This man was from the United States. He was taller than the men of her people. His skin looked very white compared with the deep reddish brown of the Indians. Rosita wondered if he looked so pale because he was troubled with mountain sickness. She was later to learn that people in the United States would not think this man's skin very white. Many of his people had pale skin.

Now the artist was talking to the Indian cook. His words were partly Spanish and partly Indian. He used his hands a great deal. Although Rosita knew only the Indian language, she understood what he wanted even before the cook did. He wanted to paint Rosita's picture. The girl was pleased, and she smiled broadly. The pancake hat bobbed up and down as she nodded an eager "Yes, yes," to the pale-faced artist.

It was easy for Rosita to stand still out by the corral while the artist drew picture after picture. The Indians of these mountains are a patient people. They also love beautiful colors and designs. So it did not seem strange that the artist liked the patterns Mother had woven into her gay wool clothes.

A surprise for Rosita

As the artist worked, Manuel stayed near by and watched. Finally the artist spoke to him. "She is just what I wanted to paint, Manuel. Now if we can only get that white llama to stand with her, I shall have a perfect picture."

The man spoke in English. Manuel smiled back at him, although he couldn't understand that language. Suddenly, however, his smile disappeared. He had caught one word that he knew. It was the word *llama.*

Then the artist spoke in Manuel's own language. "Get that llama, Manuel. Surely you must have made friends with him by now."

"No, *señor!* No!" *Señor* (sā nyôr′) means "sir." Manuel spoke quickly and looked at Rosita. For some reason he seemed afraid. "This llama is very mean. One cannot make friends with him so soon. Tomorrow, maybe, or next week. But not today. Has the señor forgotten that the llama was mean to him only two days ago?"

The artist frowned. No, he had not forgotten. Llamas have the habit of spitting at people they do not like. "Perhaps you are right, Manuel," he said. "But I do so want to paint Rosita and the white llama together!"

"Where is this llama, señor?" It was Rosita who spoke. "Maybe he will come to me. Llamas are not often mean to me. Father has taught me always to be kind to them."

The artist was delighted. "Try it," he cried. "You get ten extra centavos if you can manage him."

Manuel did not share the artist's pleasure at Rosita's offer. He caught her by the arm and held her back as he cried, "No, no, Rosita! You must not go to this

"Tomaso!" cried Rosita. She fell on her knees beside the llama and threw her arms around his neck.

llama! He is a bad animal, and he will spoil your fiesta clothes! No! No, I say! You must not."

The artist paid no attention to Manuel. He went over to a small stone room that was built on the side of his little house. He opened the door. Out stepped a beautiful white llama, with his proud head held high.

"Tomaso!" Rosita flew to the llama. She fell on her knees beside him and threw her arms around his neck. "It is my brother's llama, señor—the lost Tomaso. Why is he here?"

How Manuel showed that he was dishonest

The artist looked at Manuel. The boy hung his head and kicked at some coarse grass. He did not look up.

"What does this mean, Manuel?" The artist spoke sternly. "You promised to bring me a llama from your father's flock. And I paid you a good price for this one. I should have known he was not yours from the way he acted. Where did you get this animal?"

"The señor wanted a white llama," explained Manuel, "and my father has only brown and black and spotted ones. I found this llama alone on the mountainside one afternoon. He was as white as the silver from our mountains, and no flock or shepherd was near him. 'Surely,' I thought, 'the good God has put him here for our purpose.' So I took him to the señor."

"It is my fault that the llama was alone on the mountain, señor." Now it was Rosita speaking. "I had not then learned

to tend the flock well. But Manuel knows our Tomaso. Since Tomaso was a tiny animal, Manuel has seen Tito care for him. He should be ashamed to say this thing about the good God. Even long ago, when our people worshiped the sun, we were an honest people. I have heard my grandfather say so. Now that we worship God, we know that He wants us to be honest. It is not the good God's fault that Manuel sold our Tomaso and made my brother Tito so unhappy."

The tall artist didn't understand every word of Rosita's. But he understood enough to cause him to say to Manuel, "You can go home, boy. I cannot have you in my house any longer. I will keep the money I owe you for this week's work. It will make up for the money that I gave you for this llama."

Telling Tito the good news

Then, turning to Rosita, he asked, "This brother you speak of—this Tito. Would he come and help me in the house? I would pay him well."

"Ah, yes, señor! He would like to come. I think he will not be afraid to leave me with the flock now. Surely he sees that I have learned to tend the animals well. Let me go at once to tell him."

"Not until I have a picture of you and Tomaso," smiled the artist.

"But señor! We will return another day. Now I must tell Tito that Tomaso is found! Tomorrow is the fair, and he will enter Tomaso for the prize!"

But the señor was firm. The sun was just right, and he must paint the picture now. Rosita gave in at last. She and Tomaso stood together beside the stone-fenced corral while the artist finished their picture. He painted them against the background of bare, treeless mountains that were many shades of brown and red and yellow. The purple, snow-capped peaks were towering against the blue, blue sky.

Rosita caught her breath when she saw the picture he had made. "Manuel is right about one thing, anyway," she thought. "Surely the gringo has a hand with magic in it."

Neither you nor I could have kept up with Rosita as she raced up the steep trail that afternoon. Ahead of her went Tomaso, stepping lightly and proudly as only a llama can step.

Rosita was so out of breath when she got home that at first she could not tell Tito about Tomaso. She could only press into his hand the centavos the artist had given her, while her face glowed with happiness. She found her breath at last, however, and the whole story came rushing out. She told all about Manuel, the picture, and the centavos that must be used for the gay ribbons. She told about the fine new job which Tito could have.

"You can take the job, Tito," she went on. "The gringo with the magic hand will pay you well. I will tend the flock every day in your place." Rosita hesitated. Then she looked up at her brother and asked in a low voice, "Can you trust me now, Tito?"

Tito looked deep into her eyes. "Yes," he answered. "I can trust you now."

And so it was arranged. Tito would work for the artist, and Rosita would tend

Tito, Rosita, and Father followed the llamas. Then came Mother, spinning and carrying the baby.

the flock. But not until the day after tomorrow. For tomorrow was the fair! And now Tomaso could be entered, after all. Would he win the prize?

The trip to the fair

Long before daylight the family were getting ready for their trip. They were going down to the village where the fair would be held. Father had come home, and it was good to have him there.

A whole train of llamas was loaded with things to be sold in the market place. There were bags of chuño and three tall jars made of clay. There were yards of beautiful colored cloth that Mother had woven from llama and alpaca wool. And there were dolls and moneybags that she and Rosita had made of gay wool.

These things were put into bags and placed on the backs of the llamas. Father was careful to see that no llama's load was too heavy. A llama will simply lie down and refuse to move if his load is greater than he wishes to carry.

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Indian women selling their woolen goods in a village market place high in the Andes of Peru.

When all was ready, the llama train went before them down the trail. Tito and Rosita were close behind, and Father followed. Then came Mother, spinning as she walked and carrying the baby in her shawl.

It was a beautiful fall day in April, and the sun was soon high in the sky. Only the day before the artist had told Rosita that April was a spring month in his country. He had tried to explain that this is because the United States is north of the equator. The seasons there are just the opposite of those in Peru, which is south of the equator. When it is summer in Peru, he had said, it is winter in the United States.

Rosita couldn't understand the artist's words very well. Anyway, she didn't believe that it was spring anywhere in the month of April. Anybody knew better than that! Or so thought Rosita.

What was sold in the market place

When the long, slow trip was ended, Mother prepared to sell their goods in the *market place*. This was a great open square in the center of the village. Now it was bright with gayly dressed people and their trade goods. Mother spread a hand-woven blanket on the ground. On it and around it the family piled all the things which their llamas had carried. Then Mother, with the baby still in her shawl, sat on the blanket. She was ready to sell to anyone who wanted to buy.

Already the market place was filled with people. Most of them also sat on blankets, with their goods around them.

How many different kinds of things they had to sell!

Some of the people had come up from the lowlands at the foot of the tall mountains. They had sugar cane, bananas, oranges, pineapples, and other fruits and vegetables that grow only in hot, wet lowlands.

People who lived part way up the mountains had grain, such as barley and sweet corn. Grain would not grow either in the hot, wet lowlands or high on the mountains above the tree line. Tito and Rosita had never tasted corn. Today they would buy some of the boiled ears and eat them.

No one had as much wool cloth as did the Indians from the very high altitudes. Nor did anyone else have as much chuño.

Everyone enjoyed trading and visiting in the busy market place.

Entering the llama in the contest at the fair

The very first thing Tito did was to spend the centavos Rosita had given him for some bright silk ribbons. Next he put small sticks into Tomaso's ears to hold them straighter than ever. Then Rosita helped him tie the ribbons into the holes in the tips of Tomaso's ears. These holes had been made when he was just a baby.

Tito combed and combed Tomaso until his silver-white hair was smooth and shining. On his back Tito fastened a make-believe pack, made of a gay-colored blanket that Mother had woven. Around the llama's neck he hung a necklace of blue, red, and yellow wool that Rosita had made.

Was there ever a more handsome llama than Tomaso was as he took his place in the contest? Certainly Tito and Rosita thought that no llama had ever looked so fine. And what is more, the judges thought so, too. Tito won the prize!

And that is how it happened that Tomaso, the silver-white llama, led the way back up the mountain. Tito and Rosita sang together as they followed his light, sure feet up the trail.

Llamas grazing in a field high in the Andes. These llamas are white, gray, and black and white.

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LIFE IN THE MOUNTAINS OF PERU

Would you like to know more about life in the mountains of Peru? Perhaps reading the story of Tito and Rosita made you wonder about their ways of living. Read on to find the answers to these questions.

1. Why is it so cold in the mountains of Peru when they are near the equator?
2. Why do the crops differ so much in different parts of this small country?
3. Why is the home of Tito and Rosita made of stone and thatched with straw?
4. Why do people dress as they do in the high altitudes of Peru?
5. What foods are served in the home of Rosita and Tito?
6. Do Tito, Rosita, and Manuel ever go to school? Do they learn to read?
7. Is copper the only metal found in the mountains of Peru?
8. Why do not many people go to Peru to mine the valuable metals?
9. What other parts of the world have high mountain ranges?
10. Is life in all high altitudes like that in the mountains of Peru?

Temperature and altitude

You remember, of course, that the world is wrapped in a thick blanket of air. The higher up one goes through this layer of air, the colder it is. That is why men who fly airplanes wear such warm clothes.

The mountains in which Tito and Rosita live are very, very high. Around

These mountains in Peru are two miles high. There is no snow at this altitude near the equator.

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These mountains in Switzerland are two miles high. See how much snow there is at this altitude.

their peaks, or tops, the air is always below freezing. The snow never melts there. That is why these mountains always wear the white caps of snow that look so beautiful against the blue sky.

In every part of the world the air at the tops of mountains is colder than in the valleys below. But mountains of the same height do not always have the same temperature at their tops.

A mountain in Peru that is two miles high will have no snow cap on its top. That is because Peru is so near the equator. There the midday sun is directly overhead and each day is about twelve hours long. The sun makes the earth warmer in Peru than in a country farther from the equator. The earth, in turn, gives more heat to the air. And the air is warmed for a greater distance above this part of the earth.

In Peru, mountains must reach about three miles up into the air before their peaks are covered with snow. But in Switzerland, a country of Europe, a mountain two miles high is capped with snow. That is because Switzerland is farther from the equator than Peru is.

The causes of temperature

From this difference you can see another cause of temperature: The temperature of any place depends partly on its altitude—that is, its height above the level of the sea.

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A flock of alpacas and llamas grazing in the high Andes. The two on the right are alpacas.

You know, too, that winds help to change the temperature. If you fan yourself with a piece of paper, you feel cooler at once. Or you can stand where hot air blows on you, and the temperature around you feels warm. When winds blow from warm parts of the world toward cooler ones, the temperature of the cooler places is raised. When winds blow from cold parts of the world toward warmer ones, the temperature in the warmer places is lowered. So we see that another cause of temperature at any place is the kind of wind that blows over it.

You know how important temperature is and how much it has to do with the way people live. Whether you go swimming or skating depends on the temperature. And temperature is one important reason why people in different parts of the world have different kinds of homes. It helps explain why they wear different kinds of clothes and eat different kinds of foods.

Be sure to remember these four causes of temperature: (1) distance from the equator, (2) the amount of moisture in the air, (3) altitude, and (4) the temperature of the winds that blow.

Farming in the different parts of Peru

Peru is a country that has many kinds of crops. The west side of the Andes is very dry, but on the east side there is plenty of rain. In the lowlands on the rainy side the crops are much like those grown in any hot, wet rain forest.

Higher up the mountains, below the tree line, there are fields of corn, barley, and other grains. Here mules and donkeys are used in farming. A few horses

may be seen, but not many. Horses are not sure-footed enough to climb the steep, rough mountain trails. As one goes higher into the mountains, even the donkeys grow scarce. Llamas carry most of the burdens, except those that the people carry on their own backs or heads. Many sheep graze on the coarse grass, along with the llamas and alpacas.

High up above the tree line fewer sheep are seen. There the potato is the most important crop. Less grain is grown, and the llama and alpaca are the most useful animals. They can live on the coarse grass and climb the rough mountain trails with sure, quick feet.

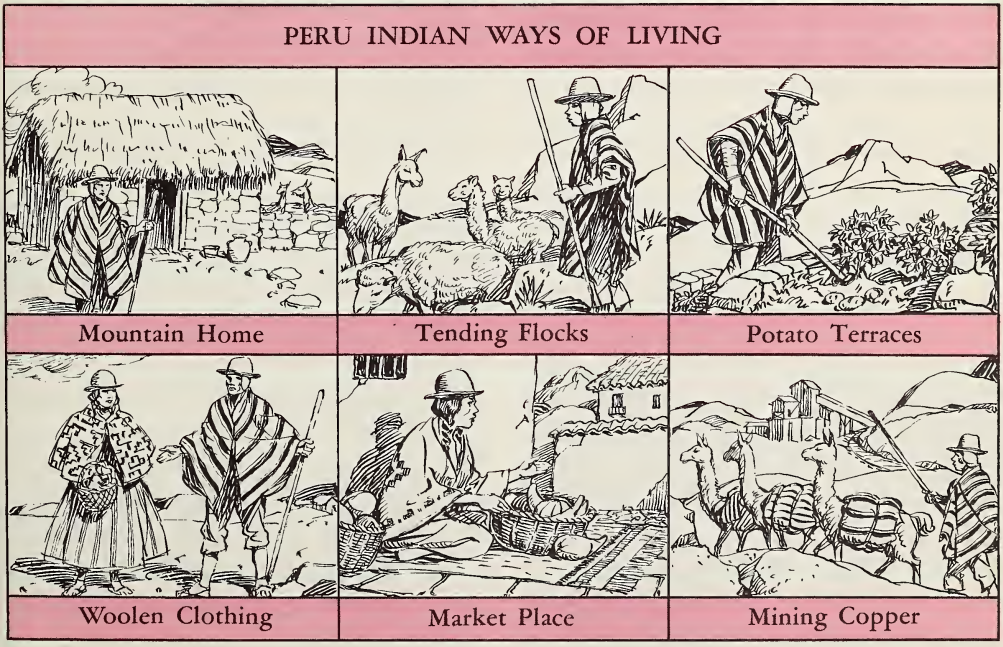
What the homes are like in the mountains of Peru

Stone is the only building material above the tree line in Peru. Houses are built by fitting the stones together to form the walls. Since there are no trees, there is no wood for window frames. Besides, the Indians do not want windows in their houses. They like to shut out as much of the cold mountain air as possible because they have so little fuel. Stones are too heavy for the roofs of the houses. The roofs are thatched with barley straw.

Inside the houses there is almost no furniture. The stove is made of stones, and there are a few stone benches against the walls. Woolen blankets are thrown over the benches or on the floor for sleeping. These blankets are woven from the wool of llamas, alpacas, or sheep.

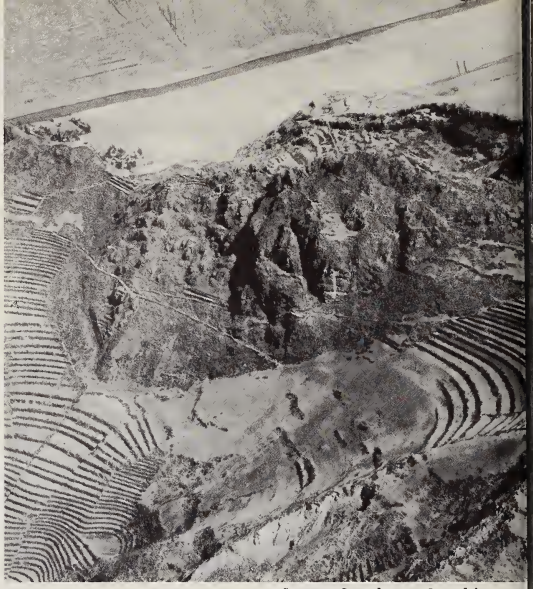
The clothes that Tito's people wear

The Indian men of Peru depend largely upon their bright-colored ponchos



Ewing Galloway

The Indians of Peru wear heavy woolen clothes.



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This air view shows terraces used for farming.

to keep themselves warm. The women wrap woolen shawls around their shoulders and wear many full woolen skirts, one on top of another.

All of these clothes are made by the Indian women and girls from the wool of their animals. First they spin the wool into thread. Then they dye it beautiful colors, using homemade dyes. They weave this colored thread into cloth. Much of the cloth has pretty designs woven with the different colors. When you remember how much wool these people must wear, you can understand why the women spin as they walk.

Heavy woolen cloth is not very comfortable next to the skin. So the Indians in the high altitudes trade their goods for a little cotton cloth. From this they make garments to wear under their many layers of wool.

These Indians usually go barefoot, in spite of the cold. This is because leather for shoes is scarce. They do not have enough animals to kill them and use their skins for leather. These people are used to going barefoot and do not mind it as we would. Their feet are not often cold.

The foods that are used in the mountains of Peru

Potatoes form the largest part of the food used in the *highlands*, or mountains, of Peru. Three times a day the Indians eat them: morning, noon, and night. Traveling down the mountains to trading places is a most difficult job. Besides, these Indians have very little which they can offer in trade. So they do not buy much food.

The llamas are too valuable to be eaten very often. Their wool is greatly needed. Only once in a while do the Indians have llama meat or kill one of their few sheep. Meat does not spoil easily in this cold climate. So the Indians dry it and make it last a long time. Their potatoes also are frozen and dried so they will last during

the whole year. These frozen and dried potatoes, you remember, are called *chuño*.

How children learn in the highlands of Peru

In some larger cities of Peru there are schools for the children. But most of the Indians high above the tree line never learn to read or write. They learn from their parents the simple tasks that are necessary to feed, clothe, and shelter the family. What were some of the tasks that Tito and Rosita had to learn to do?

Hidden treasure in these high mountains

When some people hear the word "Peru," they at once think of gold. A great deal of gold has been found in the mountains of that country. The Indians used to make their dishes of gold or silver.

Much of the gold and silver of Peru has now been mined and sent to other countries. But there is still plenty more, hidden in those high, rough mountains. There are also copper, lead, and coal, which are of more value to Peru than the gold. These are rich treasures, ready for the taking.

With so much wealth hidden in their mountains, does it not seem strange that the people are so poor? There is a very good reason for this.

You remember what narrow, steep, and rocky trails lead to the heights where Peru's treasures are buried. You remember, too, how thin the air becomes at such great altitudes. It is hard on men and even on llamas to work at such great heights.

Machinery for mining ore is large and heavy. Often it must be taken apart, loaded on animals, and carried up to the mines. There it must be put together again. This takes much time and work. Then the ore must be sent down on the backs of animals to the railroad. Building railroads in those mountains is so difficult that the railroads do not yet reach most of the higher mines. Airplanes are now

A railroad station in Peru—the highest in the world. Below is a plane that crosses the Andes.

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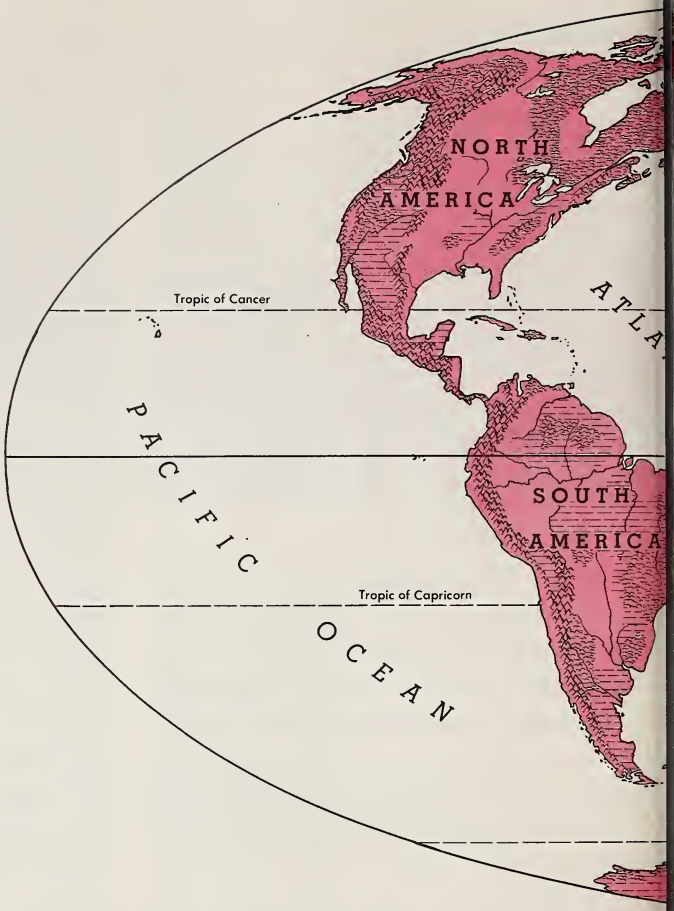
Julien Bryan from European

THE WORLD

This map shows where the mountains, hills, plateaus, and plains of the world are located. Look at the key below and see how the high mountains are shown. Find the largest range of mountains in the United States. Find the Andes in South America. Can you show about where Tito lives? Point to some hills in the Sahara. What is the land like where Esmat lives? What is the land like where Bogana lives?



High Mountains

Hills

Plateaus

Plains

beginning to be used for carrying machinery up to the mines.

The people of Peru have little money with which to build railroads and buy machinery for working the mines. When men from other countries wish to build railroads and mine ore, they find it hard to get workmen.

There are men and women in Peru who are working hard to help their people in many ways. They are trying to get such things as better schools, better farm tools, and more automobile roads, railroads, and airports. There are already thousands of miles of highways and railroads in Peru. And now the airplane is making it possible to reach some of Peru's mines more easily and dig their treasures.

Air travel in South America

Airplanes now fly all the way across South America and reach the mountains of Peru. From an airport at the mouth of the Amazon these planes fly over the great rain forests to the Andes. It would

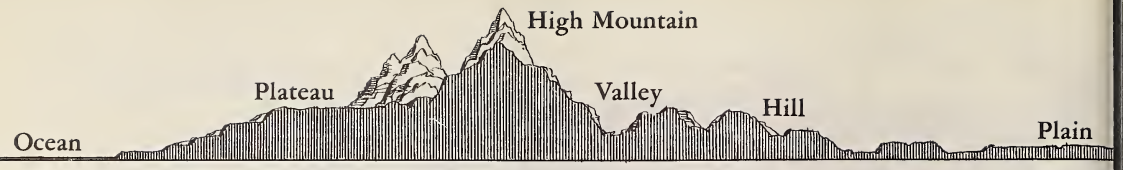
take months to make that journey by land and water. See the map on page 152.

These airplanes carry visitors to places that are hard to get to. They carry radios, sewing machines, and other machines to people who have never had them before. It is not easy to carry such things as these in canoes or on animals.

Air travel has already brought many changes into the lives of people in South America. It will probably bring many more. It is helping South Americans and the other peoples of the world to get better acquainted with one another.

HOW MAPS TELL US ABOUT ALTITUDE

None of the earth's surface is entirely smooth. Of course some parts of it are much smoother than other parts. Large stretches of almost flat land are called *plains*. Find some of the plains shown on the map above. The key at the left of



This is a cross-section map of the Andes near Rosita's home. It shows what the mountains, hills, plateaus, and plains would look like if you could slice across them from west to east.

the map will tell you how the plains are shown.

Almost level land that is high up in the mountains is called a *plateau* (plă tō′). How are plateaus shown on pages 172–173? Find a plateau in the United States.

Notice how mountains are shown on pages 172–173. Then find the Andes and some of the other mountain ranges of the world. Look to see on which continent each one is and in what part of the continent it is located.

AMONG THE MOUNTAINS OF SWITZERLAND

On the continent of Europe is a little country called Switzerland. Here, as in Peru, high mountains lift their heads against the sky. Two great ranges of mountains run through Switzerland The higher of the two ranges is called the Alps. Find the Alps on the map on page 176. Between these two ranges is a plateau. It is on this plateau that most of the Swiss, or people of Switzerland, live.

How Switzerland is different from Peru

The high altitude of the land causes life in Switzerland to be like that of Peru in some ways. Yet in other ways it is very different. Let us see if we can learn some of the reasons for these differences.

The farms of Switzerland are small, and they are almost always in mountainous regions. Little farming is done on the higher mountain slopes. The small level patches are used for pasture. The Swiss boy and girl do not follow llamas and alpacas to pasture. The animals that they take care of are cows, goats, and sheep.

The Swiss child's neighbors are not so few and far between as are Tito's and Rosita's neighbors. His home is not likely to be a rough hut. Instead it may be a pretty *chalet* (shă lā′) , or cottage, filled with comfortable, well-made furniture.

To understand some of the reasons why the Swiss people live so well, we must know something else. We must know two of the reasons why more people live in some parts of the earth than in others. The number of people who live in a place is called its *population.*

Climate and population

We have seen that life can be hard in climates that are very hot, or cold, or wet, or dry. It is not surprising, then, to learn that the population is usually larger where the climate is good.

Some regions have large populations simply because people have lived there a long time and few have ever moved away.

But many people do move about in search of a place where they can make a good living. So regions that have a satisfactory climate are likely to grow in population.

Natural resources and population

Some parts of the earth have many *natural resources,* or gifts of nature. This means that the land, or water, or air offers many things that men can use. Natural resources may be used either for making a living or for pleasure. Regions that have many natural resources are likely to have a large population.

We have seen that a good climate is a fine natural resource. It is easier to make a living when the seasons are not too hot, or cold, or dry, or wet. But a good climate is only one of the many gifts of nature. No one place on the earth has all of the natural resources. Some places have more of such gifts than other places have. What place has few gifts of nature?

The metals in Peru are natural resources. The rich land of the Sahara becomes a natural resource only when it has been irrigated. Water, as you know, is another great gift of nature. Some other natural resources are fish in the waters, useful animals, trees for lumber, coal, iron, and other *minerals.* Land on which roads can easily be built and streams that can be used for travel are also natural resources. Can you think of still other gifts of nature?

Later in your school life you will learn about the natural resources of different parts of the world. But now we want to return to the question of why life in Switzerland is different from life in Peru. These two countries are much alike in altitude, you remember.

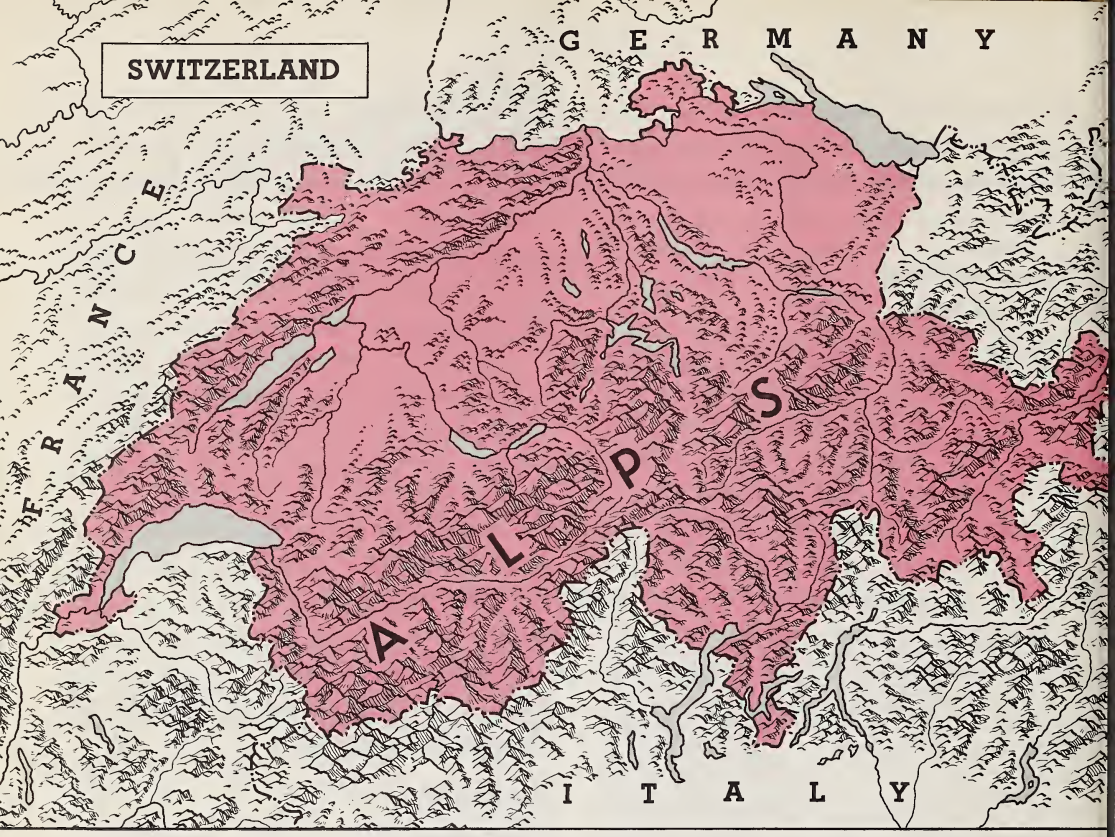
Playground of the world

Switzerland is in the center of a part of the world that has a large population.

The picture below shows haying in the Swiss Alps. On the right are a Swiss chalet and some cows.

Janion from Cushing

Janion from Cushing



Here is a map of Switzerland, showing its high mountains, the Alps. Most of the Swiss people live on the plateau north of the Alps. What countries border Switzerland on the north, west, and south? See how many lakes and rivers there are in Switzerland. On what continent is it?

This little country has what many people believe to be the most beautiful scenery in the world. On the mountain peaks snow piles on snow, making a wonderful place for winter sports the whole year round. The many lakes, *waterfalls,* and *glaciers* (glā'shẽrz) add beauty to the scenes. Glaciers are slowly moving sheets of ice.

Because Peru is near the equator, one must climb very high before reaching snow. The air up so high becomes almost too thin to breathe. It is dangerous for most people to exercise very much at such a high altitude. Switzerland, on the other hand, is far enough from the equator to have snow much lower on its mountain slopes. The air is not too thin for people who wish to exercise.

So many go to Switzerland to enjoy winter sports that it is often called "the playground of the world." In summer people from the lowlands go to Switzerland because the weather is cooler in the mountains. All of these visitors must be fed and housed. The hotels and eating places give work to many Swiss people.

The countries that border Switzerland not only have large populations; they also have good roads, railroads, seaports, and airports. These countries are France, Italy, and Germany. People from all

over the world can travel to Switzerland in comfort through these three countries. Find them on the map on page 176.

Perhaps you think that visitors who reach Switzerland have a hard, slow trip up into the mountains. But there is a surprising thing about this little mountainous country: it has many railroads. Hard work and a great deal of money are necessary to build railroads in any high mountains. But the Swiss are hard workers. They know that many people from other countries will pay well to get into the beautiful Alps for their vacations.

Why the Swiss are a friendly people

Swiss girls and boys are well trained in their own schools. The Swiss are known the world over as an honest, hard-working, and peace-loving people. Their friendly manner toward others makes a fine example for the rest of the world to follow.

No doubt this friendly feeling is partly due to their meeting people from all over the world. People from almost every country visit Switzerland. And when people from different countries get to know one another well, they usually become friends.

Another reason why the Swiss are so friendly is that for many years Switzerland has kept out of war. Its natural resources are not things, like gold or oil, that can be easily carried off to other countries. Its mountains do not make good battlegrounds. It is hard for armies to

These visitors are having fun on their skis in the Swiss Alps. On the right is a Swiss village that has fine hotels for visitors. Towering above it is the famous peak called the Matterhorn.

Swiss National Tourist Office

Swiss National Tourist Office

travel through them or for airplanes to land in them. So Switzerland is left in peace, and the Swiss people make the most of everything they have.

Switzerland's natural resources

One of Switzerland's best natural resources is its scenery. Another is its many waterfalls. Since there is no coal in the Alps, the waterfalls must furnish *electricity* to run the trains.

Another fine resource is a climate that is good for raising cows. Cows can find food on mountain slopes where farming would be difficult. Tending the cows gives work to a great many people. The cheese made by the Swiss is among the finest cheese that is made anywhere.

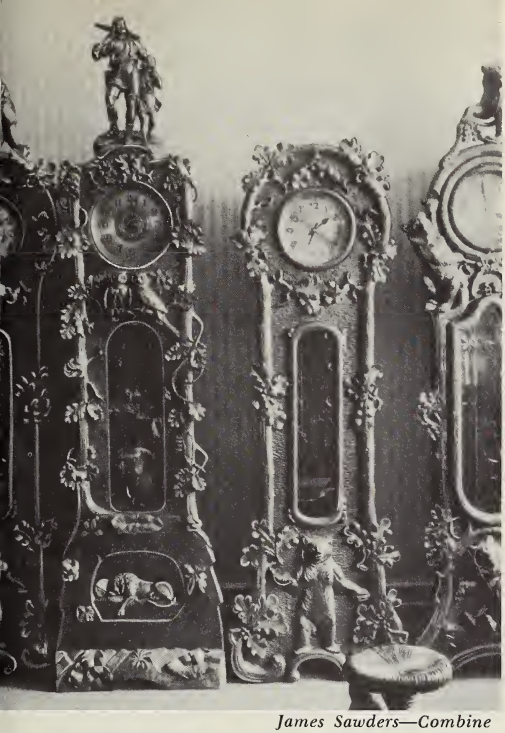
The people of this interesting little country know how to make the best of their natural resources. One example of this is their use of wood. There are some forests on the lower slopes of the mountains. These forests are not so big or so valuable as many others in the world. But Swiss people carve the wood into beautiful objects that are worth a great deal when they are finished. It is the skill with which these objects are carved that makes them so valuable.

The need for fine men and women

It is hard to tell just how the Swiss became such good workers. Some of the early Swiss must have learned the value of honest, careful work. And they must

This train carries skiers up in twenty minutes. *Swiss National Tourist Office*

On the right is a beautiful Swiss waterfall. *Swiss National Tourist Office*



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Swiss National Tourist Office

These Swiss clocks have skillful wood carving on them. The farmer at the right is making cheese.

have passed this knowledge on to others. Sometimes just one person who believes in honest work or in any other good thing can help a whole country.

That is why it is so important to choose good men and women as leaders in our own nation. That is one reason why a boy or girl should use every chance he has to become a fine man or woman. The world has more and more need for such men and women. Will you help to fill that need?

SAVING NATURAL RESOURCES

You have just learned how carefully the Swiss people use their natural resources. And on pages 132 and 146 you saw how men make the most of water when it is scarce. You have also learned that people often improve their natural resources.

Why our resources should be saved

But there is another side to this problem. Sometimes when there is plenty of a natural resource, men waste it. They do not realize that it can be used up. Yet many natural resources will become scarce if they are not used with care.

Our own country has had a large supply of natural resources. People have seemed to feel that these will last forever. But they will not, unless we take better care of them.

Wood is now scarce and high-priced in some places where great forests once grew.

Palmer from Monkmeyer

SCS from Monkmeyer

These pictures show careless use of natural resources. Fire has destroyed the large trees on the left. The field on the right was plowed the wrong way, and good soil has been washed away.

When there were plenty of trees, they were cut down without care. If some of the small trees had been left standing, the forests would have continued to grow.

Many fine forests are destroyed every year by forest fires. Such fires are usually caused by careless people. Can you think of some of the ways in which forest fires are started?

In the early days of our country there was plenty of rich soil for those who wanted to farm. Now much land is too poor to be worth farming. It is sad to see men and women working hard on soil that is too poor to grow good crops.

Often the richness in the soil has been washed away by rains. The right kind of plowing will usually keep this from happening. (See the chart on the next page.)

Taking care of natural resources

Think back to the story of Tito and Rosita. In it you saw how the farmers kept the soil in their potato fields from washing away. In more level places, farmers can plow their fields in a way that keeps the soil in place.

Some crops take a great deal of richness out of the soil. There are other crops that put richness back into it.

On page 67 you saw how the Amazon Indians wear out their garden soil. When the crops use all of the richness in

the soil, they move the garden to a new spot. Would this be a good plan for the people in our country? Why not? How can our farmers keep their soil fertile?

Most natural resources are finally lost unless people take care of them.

At one time the people in our country gave no thought to saving gasoline. There was so much of it. Then a world war came and great quantities of gasoline were suddenly needed. Some people who owned automobiles could not get enough gasoline to run them. They learned what it would be like to do without gasoline. And we realized that our country's supply would not last forever unless we saved it.

What is meant by conservation

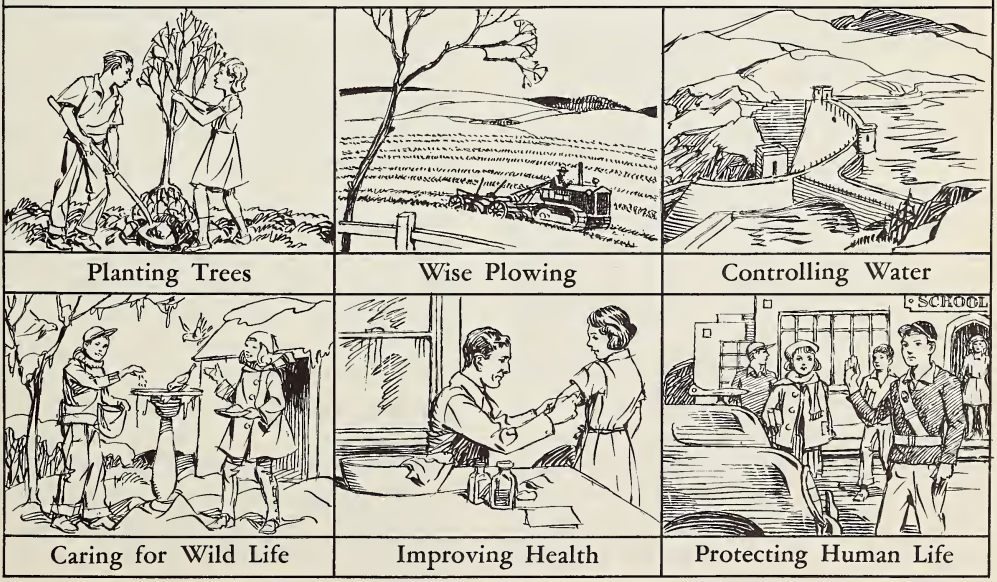
Taking care of the things we have is called *conservation*. To *conserve* means to save or take care of anything we have.

On pages 102–103 you saw how the caribou disappeared from Alaska. When they were gone, the people almost starved. Perhaps you remember how our government took reindeer to Alaska to keep the people from starving. Then the reindeer began to disappear, too.

Do you remember who it was that taught the Eskimos to conserve the reindeer? What change did this make in the life of the people? If you have forgotten, read page 103 again and see. This story is a good example of conservation.

Natural resources are not always things, like wood or water or gasoline. As we read about Switzerland, we saw that its people were its best resource. Every resource, no matter what kind it is, can be wasted. Or it can be conserved and made more and more useful.

CONSERVING OUR RESOURCES



Planting Trees | Wise Plowing | Controlling Water

Caring for Wild Life | Improving Health | Protecting Human Life

GIVING A PLAY

Act out the story of Tomaso, the silver-white llama. Divide the story into acts and scenes, as on page 74. See how well you can plan the play together. Use different committees for different parts of the work.

Make your scenery and costumes look as much like those of Peru as possible. Give the play for others to enjoy.

CHOOSING THE RIGHT REASON

After each unfinished sentence below, there are three facts: (a) (b) and (c). Each of these three facts is true, of course, yet only one of them finishes the sentence correctly. Can you choose the right fact? If you can, you are learning to use facts in reasoning.

Write the number of each sentence on a sheet of paper. After the number, write the letter (a, b, or c) of the fact that finishes the sentence correctly. Do not write in this book.

1. It is cold in the mountains of Peru because: (a) they are not far from the equator, (b) they are very high above sea level, (c) they are in South America.

2. Tito's home is made of stone instead of wood because: (a) wood does not last as long as stone, (b) his father had never made a house of wood, (c) he and his family live above the tree line.

3. Potatoes are Rosita's main food because: (a) almost nothing else will grow above the tree line, (b) she likes them very much, (c) they are not hard to cook.

4. The world does not get as much copper from Peru as it might because: (a) there is also silver in the mountains, (b) copper is not as valuable as gold, (c) it is hard to get machinery up to the mines and to get the ore down to the railroad.

5. Visitors cannot exercise much in the mountains of Peru because: (a) the sun's rays are hot, (b) the air is very thin, (c) they cannot get the foods they usually eat.

When you have finished the sentences, talk together about the endings you chose for them. Tell why you chose these endings.

CAN YOU PROVE IT?

Write on a sheet of paper the number of each sentence below. If the sentence states a fact, write the word "Yes" after the number of that sentence. If the sentence does not state a fact, write the word "No" after the number of the sentence.

1. All the people who live in the same country are very nearly alike.

2. In a country that has many of nature's gifts, the people always live well.

3. Good ways of travel have a great deal to do with the wealth of a country.

4. When mountains are the same distance from the equator, the temperature at their tops is always the same.

5. The altitude of a place is one cause of its temperature.

6. If you should visit Peru, you would be a foreigner there.

When you have finished these sentences, talk together about them. Be ready to give facts that prove certain sentences are true. Give facts that prove other sentences are false.

SHARING WORK

Divide your class into four or five groups. Let each group report on one of the subjects listed below. Each group should choose a leader, find the necessary material, and plan the report together.

1. The natural resources of Switzerland and how they are used
2. How the natural resources of our country are being conserved
3. How the natural resources of our state are being conserved
4. How the natural resources of our community are being conserved
5. Why the population of our community has grown larger or smaller during the past fifty years
6. The altitude of our community and how it affects the climate

LOCATING PLACES ON YOUR GLOBE

Put the Andes and the Alps on your globe, showing them as high mountains are shown on the map on pages 172–173. Make a dot to show the home of Tito and Rosita.

Point out on your globe where Peru, Switzerland, France, Italy, and Germany are. There is not room for their names.

Do you live on a plain, a plateau, a hill, or a mountain?

SOME THINGS TO THINK OVER

Each person has natural resources of his own. We call them "human resources." Each one of us has time, which he may waste or use. Each of us has the power to learn. He can waste this power or make it very valuable. Each of us has the chance to win the love and respect of others. He can make much of this chance, or he can throw it away. There are other important human resources, too.

Read pages 160–162 again and name one human resource that Manuel wasted. Then name one human resource that Rosita learned to conserve.

Are you making the most of your own human resources? You can help yourself to answer that by reading the next group of questions. Think them over. You need not talk to anyone else about your answers.

Do I use my time well? Do I prove that others can depend on me? Is my share of the work well done? Am I winning the love of others by being friendly and kind?

MORE ABOUT CONSERVATION

What have you learned about conservation from the pictures on pages 180 and 181? See if you can answer these questions:

1. What might have started the forest fire? What harm has been done?
2. In what direction does the wrong kind of plowing go? The right kind? What harm is done by the washing away of soil?
3. What reasons can you give for planting trees?
4. How do dams help in controlling water? What other ways of controlling water have you read about?
5. Why should we help the birds? What do they do for us? What other kinds of wild life should be protected?
6. What is the doctor doing to the girl's arm? How will this guard her health? What other ways of improving health can you think of?
7. How is the boy in the last picture protecting human life? How else may human life be conserved?

MAKING WORDS YOUR OWN

See if you can use each of these words correctly in a sentence of your own. You may wish to make this into a quiz program, as on page 27, or a word game, as on page 107.

glacier	mountain range	centavo
alpaca	lowlands	terrace
fair	waterfall	fiesta
tola	minerals	fuel
chalet	highlands	corral
poncho	Irish potato	chuño
señor	foreigner	plain
spindle	electricity	gringo
ore	market place	plateau

Tom, Jack, and Hendrik live in a large city in the United States. Jack is unkind to Hendrik, because he is a foreigner. Tom and Jack have a very important lesson to learn about being kind.

When People Meet

Most of the stories in this book have been about peoples who live very simple lives. They have few ways of making a living and few good tools with which to work. And they have few of the many comforts that we think are necessary.

We have seen that these people do not make progress for one or more of these reasons: a poor climate; poor natural resources; difficult ways of travel and of carrying goods from place to place; few chances to learn about other people's ways of living.

We know that population is greater where the climate is pleasant, the natural resources are good, and travel is easy. This is true of Switzerland and also of the United States.

The way of living is always changing in places with large populations. When people from different parts of the world get together, they usually take on some of each other's ways. Changes come about for this reason and for other reasons too.

Sections with large populations usually offer more ways of making a living than sections with small populations. A person has a better chance to do the work he can do best. Then with the money he receives for his work he buys what is needed by his family.

Where there is a chance to sell things to many people, great factories are built. Men *invent* new machines. To invent means to make something for the first time. New machines are used for making new kinds of goods. These new kinds of goods often make life easier. Books are written about the *inventions* that have been made. Schools are necessary in order that boys and girls may learn how to use the better ways of living.

The next story is about a boy who lived in a large city in the United States. Tom learned some very important facts about his own way of living.

Tom and Jack were walking home from school one warm afternoon in spring. That is, they were walking part of the time. For they were so interested in what they were saying that they often stopped, the better to speak their minds.

Planning for the model airplane contest

What did they have to talk about that was so exciting? Why, the contest, of course. The model airplane contest. It was less than a month away. And both boys were planning to enter model airplanes on which they had been working for a long time.

Their airplanes were almost exactly alike. Each of them had a wing spread of six feet. Each of them would stay in the air about four and a half minutes. The boys never tired of talking about them.

"I believe one or the other of us will win first prize this year," Tom was saying.

"Well," Jack replied, "if I should lose the first prize, I would rather see you get it than anyone else. But I mean to win it for myself. You can just count on that."

Meeting Hendrik, the new boy in school

As they turned the corner, they saw another boy from their own grade in school. It was Hendrik, a new boy. Hendrik looked back and saw Jack and Tom. He stopped and waited for them.

"Hello!" he said as the two boys came near. If you had heard him speak just that one word, you would have known that English was strange to him.

It was Jack who answered, "Hey, Squarehead, what do you want?" His tone was far from friendly.

Hendrik's face turned red. He looked from Jack to Tom, and back again, before answering. "Oh, nothing, I guess. Nothing. See you at school tomorrow." And he hurried on up the street by himself.

Tom's feeling about Hendrik

Tom felt a little unhappy. Hendrik's eyes had looked so surprised and hurt as he turned away. Tom would have liked to call after him to say some friendly word. He would have liked to ask the boy to wait and walk with them. But he didn't. The truth is that Tom was afraid Jack might make fun of him if he stood up for Hendrik. Jack might even leave Tom to walk with the Dutch boy while he—Jack—hunted up another pal.

Tom couldn't bear the thought of losing his best friend. He and Jack always had so many things to talk over together. Jack was president of their crowd's private club called the "Secret Scientists." *Scientists* are people who are trying to find out new facts about our world. Jack had already won two prizes in the yearly model airplane contest—a second prize and a fifth. So Tom kept quiet and watched the Dutch boy hurry on.

"I can guess what that Squarehead was going to say," said Jack. "He has probably heard of our club and wants to get into it. Boy, did I shut him up in a hurry!" Jack laughed out loud as he thought how clever he had been. But

Tom could give only a very faint smile.

Then Tom asked, "Why don't you want him in the club, Jack?"

"Oh, for plenty of reasons. First of all, he isn't even an American. We've got plenty of American boys in our *neighborhood* without taking in dirty foreigners. Besides, his folks can't be much of anybody. Look at the clothes he wears. Patched trousers—and he wears them to school, too. His father surely can't be a success in business."

Tom thought that Hendrik might be a foreigner, but he certainly couldn't be called "dirty." There was no use in saying so to Jack, though. Anyway, it was true enough about the clothes Hendrik wore. His trousers were fresh and clean. But it was plain to see that they had been mended over and over again. Even the tops of his shoes were patched, and his coat was cheap and thin.

Tom watched Hendrik as he walked ahead and turned down a cross street toward some poorly-kept apartment houses. Perhaps Jack was right. Maybe Hendrik was not their kind. Maybe the club wouldn't be so much fun if he were in it. He did have some odd foreign ways.

Nevertheless, the spring day didn't seem quite so pleasant to Tom as he left Jack and went on home. He kept seeing the hurt surprise in the Dutch boy's eyes when Jack had spoken to him so roughly. Hendrik had looked rather lonely as he hurried up the street by himself.

What had happened while Tom was at school

But Tom forgot all about Hendrik the minute he opened his own front door. It was still a good two hours before time for Father to come home. Yet Mother was hanging his hat and coat in the front hall closet.

"Is Father home so early?" Tom spoke eagerly. Maybe they were going somewhere.

"Yes." Mother turned to answer him. Tom saw that her eyes were troubled, though she went on talking in a cheerful manner.

"Father is sick, Tom. The doctor says that his heart is tired and he must stay in bed for a while to rest it. He says that a good rest will put Father on his feet again."

"But who will look after his experiments?" Tom asked. *Experiments* are tests which people make to discover new facts or to prove facts they already know.

Mother dropped her cheerful manner. "That's just the trouble," she replied. "I don't know. But someone else will have to look after them. He must take this rest, Tom—he simply must. The doctor says he will not get well if he doesn't stay very quiet for the next few weeks. And he must be free from all worry."

Father not get well! Tom had never even thought that Father could be sick. Once in a long while he himself had been in bed for a few days with a cold. And once Mother had been ill in the hospital for many weeks. But Father! He was always well and always busy. Yet no matter how busy he was, he was a real pal to Tom. The very idea of his not getting well made Tom feel cold and afraid.

"Go up and see your father, Tom. He is in his bedroom. He might like some company."

"Well," said Mother, "if you must know, Miss White did telephone. Mr. Shutts has another offer."

Tom took the stairs two steps at a time. He had meant to put in some good work on his model airplane before supper, but that could wait. He had been wanting a chance to ask Father some questions about the finishing coat of paint, anyway.

The bedroom door was open. Father was lying very still under the covers, and Tom saw that he looked white and tired. He didn't call out, "Hello there, fellow!" at the sight of Tom or give his usual gay smile. He just lay there, quiet and still.

A lump came into the boy's throat. The room seemed suddenly strange. He didn't know what to say.

It was Mother's cheerful voice that broke the silence as she followed Tom into the room. "My goodness! What are you two so sad about? It's going to be wonderful for Tom and me to have you to ourselves for six whole weeks, Father. You stay so busy at your work that we never see enough of you. Tom has been wanting your help with his model airplane. He is eager to win first prize."

Father's worry about his experiments

Father's eyes were tender as he looked at Mother, and his lips smiled. But his voice was worried as he asked, "Has Miss White telephoned from the *laboratory?* She was to let me know if we had an answer from Mr. Shutts." A laboratory (lăb′rȧ tōr ĭ) is a place where experiments are carried on.

"Let's talk about that tomorrow," said Mother. "You must rest now."

"No," said Father. "I must know now. I cannot rest until I learn whether this

Mr. Shutts will take over my work at the laboratory. I simply cannot take this rest unless he can go on with my experiments."

"Well." Mother hesitated. "If you must know, Miss White did telephone. Mr. Shutts has another offer. He wants a day or two in which to think it over."

Father's eyes looked big and dark, and his face became even whiter than before. Tom tried to say something that might help. "If this man does take the other offer, you can just get someone else," he suggested. "There are plenty of scientists in our country."

Father looked at Tom as if he had just noticed that he was there. Then he smiled slowly, but he shook his head. "No," he answered. "I know of no other man whom I could trust to go on with my experiments. I have put many years of work on this new invention. If I should stop now, in the middle of my experiments, all my work might be lost. And the money which the *foundation* has let me use would be wasted. No, I must have someone whom I can trust if the experiments are to be successful."

Father's work with the foundation

Tom knew what Father meant by the "foundation." This was a group of scientists who were working to find new ways of making life more pleasant and comfortable. Some of them were hunting for the causes of certain diseases or for ways of curing other diseases. Some were trying to make even better plans for teaching the children of the country. Others, like Tom's father, were trying to work out new inventions that might be useful to people everywhere.

Much of the money that paid for this work had been given to the foundation. The givers wished to use some of their money to bring better ways of living to the world. The United States Government had also given money to help carry on the foundation's work.

Tom's father was one of the best scientists the foundation had. He had worked for many years on one problem. He felt sure that, if the experiments he was doing were successful, he would have an important invention to give the world.

Tom knew how important the work was. So did Mother. Yet she was insisting that Father should stop in the middle of those last experiments. They might mean the success or failure of the whole thing.

"Father must be very, very sick," thought Tom.

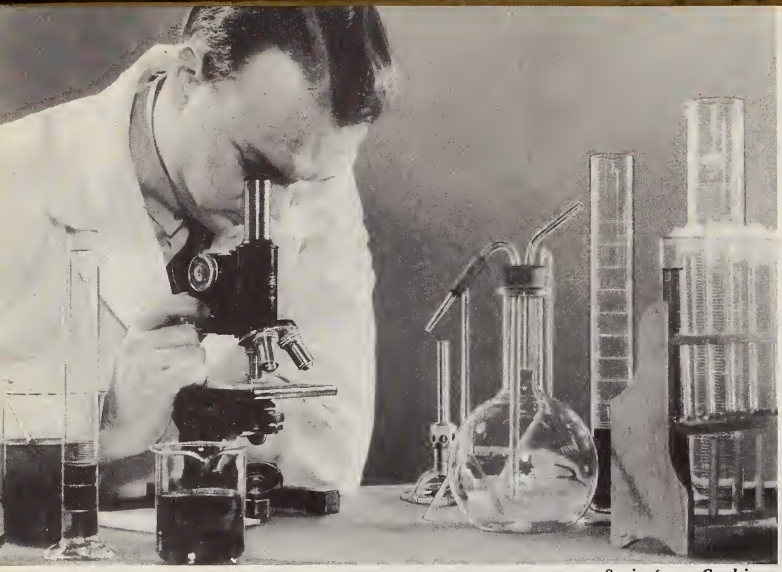
"Surely you can get someone else if Mr. Shutts doesn't take over your work," said Mother.

"Maybe so. Maybe so." But there was no sound of hope in Father's tired voice.

Tom's promise to his sick father

"Who is this Mr. Shutts?" Mother asked.

Father explained. "He's from the Netherlands. Before the war he worked in his own country. He was working on the same problem that I am working on. He did a good deal of writing, and I read a number of his articles. I could see that he really knew his job. When war came and the enemy took his country, he could



Sozio from Cushing

This scientist is carrying on some experiments in a laboratory. Do you see the test tubes he is using? Can you name the instrument that he is looking through?

not go on with his work there. He finally escaped to America. Here he joined the United States Air Force and was badly wounded. He is just out of the hospital. I have never met him, but I understand that he is now able to go back to work."

"From the Netherlands!" Tom suddenly remembered Hendrik. "There's a new boy in our class at school. His name is Hendrik and he is Dutch. I think he wants to join our club, but Jack doesn't want him because he is a foreigner. I guess his family doesn't have much money, either."

Father raised himself from his pillows. "Come here, Tom." His voice was stern.

Almost afraid, Tom went to the bed and laid his own hand in the one Father held out to him. The man's large fingers closed over the smaller ones of his son. He looked into the boy's eyes and spoke in a voice that was gentle but very serious.

"Tom, I must tell you something that is very important. It does not matter where a person is from. The thing that really matters is where he is going."

"I don't understand what you mean."

"I mean this, my son. There are good people in every country of the world. And there are also people in every country who do not live in a kind and helpful way. The fact that a person is from a certain country doesn't tell us what sort of person he is. It only tells something about the language he speaks, the clothes he wears, or other things that are not important.

"The thing that counts is the way people work, and think, and act toward others. If you forget that, Tom, you are going to miss many of the best things in life. What matters is not where a boy is from, but what sort of person he is trying to be.

"Ours is a fine country, Tom—one to be proud of. But no country is any better than the people in it. You can never do your country honor by being unkind to people from other lands. You can honor America only by being the sort of person that someone from another land would like to know. In becoming that sort of

person, nothing is more important than just being kind. Remember that, my son. Promise me now that you will remember it always."

"Yes, Father. I promise."

With gentle hands Mother pushed Father back upon his pillows. "Rest, now," she said. "Tom can go down and work on his airplane model."

Tom winked back the tears that had filled his eyes as Father talked in such a serious way. "Mother," he said, "I need to see Hendrik. He lives just a few blocks away. Could I go to see him now, before supper?"

"Yes," Mother smiled. "Do go, Tom."

Tom's visit in Hendrik's home

As Tom walked the few blocks that took him into Hendrik's neighborhood, he wondered just what he would say. What reason should he give for this visit? He didn't remember Hendrik's last name. So he didn't know how to find the apartment in which the boy's family lived. He did know which building it was in, though, for he had seen Hendrik going into it one afternoon.

Somehow he must find Hendrik. Looking into Father's troubled brown eyes, he had seemed to see another pair of eyes that were very blue. They were wide with hurt surprise as they looked from Jack to Tom and back again. Those eyes belonged to Hendrik. And Tom knew suddenly that he had to do something for Hendrik. He must do something that would make up for having kept quiet when Jack was so unkind that afternoon. Just what he was going to do he really didn't know. But as it turned out, that didn't matter.

He learned from a woman on the first floor that a boy named Hendrik lived three flights up. When he had climbed all those stairs, it was Hendrik himself who answered his knock. The Dutch boy's face showed his pleasure when he saw Tom standing there.

"I am glad you have come," he said in English that had a foreign sound. "I wanted to show you my airplane."

He led Tom into the tiny apartment. Hendrik took a cardboard box from under a bed in the corner. He opened it and held it out to Tom.

Hendrick's model airplane

Tom looked into the box. Inside was a model airplane. It was small—not nearly so large as the airplanes on which he and Jack were working. It was a soft silver-blue. It had a finish so smooth that Tom knew it had received much careful rubbing after each coat of paint. Everything about it was perfect. That is, all but one thing—the right wing was missing. Only a broken bit of it showed where it had been fastened to the body.

"Gee! What happened to it?" asked Tom.

"I made it in the Netherlands," Hendrik answered. "When we escaped to America, it was the one thing that I wanted to bring with me. We had a long, hard trip, and the wing was broken during the journey."

Tom looked at every part of the model with deep interest. He saw one thing very clearly; this plane was better made

than either his model or Jack's. On the box were the dates when Hendrik had tried the plane and the length of time it had flown. Tom read the time Hendrik had put down for the last trial: "In the air five and three quarters minutes."

Why it was that Hendrik could not enter the contest

Tom sounded a little worried as he asked, "Are you going to enter it in the contest next month?"

"No," said Hendrik. "I could not enter it with a broken wing. But I wanted you to see it, anyway. That is what I wanted to tell you this afternoon. I meant to ask you and Jack to come and see it."

"Oh!" For a minute Tom stood silent and ashamed. Then he suggested, "You could make a new wing before the contest. There is time enough."

"Time, yes," answered Hendrik. "But I have no money for material."

"Why, it wouldn't take much," Tom began. Then he stopped, remembering Hendrik's mended trousers and patched shoes. His face grew red.

Hendrik finished the sentence for him. "No," he replied, "it would not take much money to get material to fix the wing. But even a little money counts with us now. And I have no tools. We had to leave everything we owned in the Netherlands. And Father is not yet back at work, though he will be very soon now."

"Has he been sick?" asked Tom, thinking of his own father.

"He lost a leg in the war," Hendrik replied. "And he had other wounds, too. He was in the hospital for a long time. He is all right now. He has a new leg, and he doesn't even limp. He says he is thankful to the men who work to find new ways of doing things. A long time ago there was not much help for a person who lost a leg or an arm.

"Father says that his great-grandfather lost a leg in another war. All the rest of his life he had to walk on a stick of wood fastened to his knee. Some people called him 'Peg-leg.' No one will ever call my father 'Peg-leg.' "

"Calling people names is a foolish thing to do, anyway," said Tom. He remembered with shame the ugly word "Squarehead" which Jack had thrown at Hendrik that very afternoon.

There was silence for a while as Tom kept on looking at the beautiful little plane. Hendrik was happy just watching his visitor. He could see from Tom's face that he thought the model a very fine piece of work. And indeed it was.

Tom's chance to help Hendrik

As for Tom, he was doing some hard thinking. He had come up here in the hope that he might do something pleasant for Hendrik. He had had no idea what he might be able to do. Now he knew well enough what he could do. He could let Hendrik have material to fix that wing and never miss it. He had plenty of it in his own workshop. And he could let Hendrik use his tools, too. Tom really did want to help Hendrik, but—

There was another side to this thing. Tom knew good work when he saw it. If Hendrik entered his model in the contest,

"Bring your plane over to my house, Hendrik," said Tom. "You can fix it in time for the contest."

neither Tom nor Jack would have a chance for the first prize. Tom wanted that prize. He had worked on his plane for many months. Father wanted him to win first prize, too. And now Father was ill and troubled about his own work. It would be wonderful to bring home the prize and see Father's face light with happiness and pride. He had to win! He just had to!

Anyway, if he should lose, he could bear the loss better if Jack got the prize. Jack was his best friend. They had played together all their lives, sharing their pets and their fun. Jack could be rather mean to other fellows sometimes, but he had always been good to Tom. Yes, Tom figured, if he had to lose the first prize, he wanted Jack to get it. What would Jack say if he should let a foreigner have the materials with which to beat them both?

There was just no use in being soft. A fellow was supposed to look out for himself and his friends. If he didn't, who would? That's what Jack always said.

Tom handed the box back to Hendrik. "Well," he said, "I've got to be going. It's almost supper time."

Friendly pleasure was shining in Hendrik's eyes as he took the box and said, "Come again, Tom. Please come again."

"Sure." Tom grabbed his cap and started quickly down the stairs. Halfway down the first flight he looked up and saw Hendrik still watching him from above. "You come to see me," called Tom.

He ran on down the first flight of stairs without waiting to hear Hendrik's warm "Thank you!" He went down the second

flight more slowly. In the middle of the third flight he sat down to think. After a little while he got up and went on.

Why Tom changed his mind

It was not until he was out in the street that he was sure of what he had to do. He could see Father almost as plainly as if he were looking right at him. He could hear Father's voice saying, "Nothing is more important than just being kind. Remember that, my son. Promise me now that you will remember it always." And he could hear his own voice answer, "Yes, Father. I promise."

Tom turned and went back through the apartment house door. His heart felt as light as his feet as he went bounding up those three flights of stairs. Hendrik was sitting on the top step, polishing his already shining plane with his pocket handkerchief.

Without waiting to catch his breath, Tom exclaimed, "Bring your plane over to my house after school tomorrow, Hendrik. I have a dandy workshop that Father fixed for me. I think we can find enough pieces of wood for that one small wing that is broken. You can fix your plane in time to enter it in the contest."

Why Mr. Shutts decided to carry on Father's work

The next day after school Tom sat near Father's bed waiting for Hendrik, who had gone to get his airplane. Tom was wondering if he should tell Father that he didn't have much chance at the first prize after all.

His thoughts were broken by Mother, who came into the room. She was followed by a tall, thin man with very blue eyes and a pleasant smile. Before she had time to introduce the stranger, Father sat up in bed and asked, "Could it be Mr. Shutts?"

"It could be no one else," the stranger answered. He held out a friendly hand to the man on the bed. "I have come to tell you that I shall be very happy to accept a job at the foundation. I shall be glad to carry on your work while you take that needed rest."

"Thank God!" Father lay back on his pillows and closed his eyes. For a few minutes there was no sound in the room. Then Tom heard Hendrik at the door, and he slipped out quietly.

Father opened his eyes. "I don't know what made you decide to come to us," he said. "But whatever it was, I am glad—very glad."

The tall man smiled. "I can tell you why I decided to come," he replied. "You may think that it was a very little thing.

"From the minute I received your offer, I wanted to accept it. It is the kind of work to which I have given most of my life. But someone else offered me more money—not much more, but a little. My family has had so little money for so long that I wanted all I could get for them. I decided to take the other offer.

"But last night when I got home, I found that your son had done my boy, Hendrik, a great kindness. He had offered him the use of his workshop. When I saw Hendrik's happiness, I realized again something I have tried hard to teach my boy. I realized that money is never

"I have come to tell you," said Mr. Shutts, "that I shall be very happy to carry on your work."

so important as a piece of work well done.

"I talked the whole matter over with my family. Both my wife and Hendrik said at once that I should accept your offer. They know you are doing a job that may be of great service to the whole world. My wife says that, since we have had so little, we shall feel quite rich on what the foundation offers. So here I am."

Mother looked at Mr. Shutts through happy tears. "I'll leave you two to talk things over," she smiled. Then she too went down to the workshop.

Tom's reward for his kindness

Tom introduced Hendrik to Mother and pointed out to her the beautiful work on his young friend's model plane. When she started to get the boys some fresh homemade cookies, Tom followed her.

"Mother," he said, "do you think Father will be very much disappointed if I don't win the first prize? I think Hendrik may get it if he does a good job on that broken wing."

Mother put her arms around Tom and drew him close. "Oh, Tom, Tom! Don't you worry about that prize. Your kindness to Hendrik has probably saved your father's life!"

It was not until later that Tom knew just what Mother meant. He understood one part of it now, though—Father would get well, and somehow he had helped.

There would be happy evenings together in the workshop again. And Father would teach him to do work as good as Hendrik's—maybe better. He could

HOMES AROUND THE WORLD

In Part Two you have read about nine different peoples in various parts of the world besides the United States. Their homes are pictured on this map of the world. Can you name each group as you point to these homes? On what continent does each group live? What kind of climate do the Eskimos have? How does their climate affect their ways of living? What kind of climate do the desert Arabs have? How does this climate affect the Arabs' ways of living? Compare the homes, the clothing, and the foods of the Arabs and the Eskimos. Why are they so different? Compare the climate of the Amazon Indians and of the Peru Indians. How are their ways of living different as a result? Which two peoples of the nine shown on the map have learned to make the best use of their natural resources? Are these peoples more primitive or more civilized than the others? In which of the nine homes would you rather live? Why?

learn from Hendrik, too. So could Jack. And they would have another chance at the first prize in next year's contest.

"Mother," said Tom, "may I ask Jack to come over? I want to show him Hendrik's plane."

PRIMITIVE AND CIVILIZED PEOPLES

Peoples such as the Amazon Indians, whose lives depend almost entirely upon nature, are called *primitive* peoples. The word *primitive* means "first." Primitive men and women live very much as the first people of the earth lived. Primitive people get their living from the land and water about them, without improving much on what they find. They have discovered few ways to control nature and multiply its gifts.

On the other hand, you have seen that many peoples have learned to control nature in a number of ways. They have

learned to use its gifts to make life more comfortable and interesting. They keep finding new ways of earning a living. People who have learned such lessons are said to be *civilized*.

Which of the peoples we have studied in this book seem to be most primitive in their ways of living? You know a great deal about civilized ways of living because you live in a civilized country. Compare the houses of a civilized country with those of a primitive people. Compare the clothes, the foods, and the ways of keeping warm or cool. Compare the ways of earning a living.

We sometimes find primitive people living near civilized people. And not all the people within a civilized nation have every comfort and advantage that others enjoy. Close to one of our large cities there is a tribe of Indians who still keep their primitive ways of living. However, most peoples of the world keep trying to work out better ways of living. Because of this, many changes have come about in man's customs, or ways of doing things.

Hoit from Cushing

The Seminole Indians live in their old ways within sight of the city of Miami, Florida.

The capital of Peru is a modern city, as you can see. Below is a large hospital in New York.

James Sawders—Combine

Our own country is not the only civilized nation in the world. In fact, there were many civilized countries long before men knew there was such a continent as North America. Later in your school life you will learn about these countries and the civilized customs they have given us.

Reading of ways in which men have learned to control nature

The many stories of how men have improved their ways of doing things are interesting to read. It is not possible to tell all of these stories within the pages of this book. It is not even possible to name all the kinds of *improvements* that have been made. But Part Three will tell about some important ways in which men have learned to control nature and make it serve their needs.

As you read these stories about improvements men have made in their ways of living, remember the lesson that Tom learned: No matter where or how men live, they cannot be happy together unless they are kind to one another. Each of us must learn this lesson for himself and make use of it in his everyday life.

Remember what Tom's father told him about a country—that it can be only as good as the people in it. The greatest need of every country, including our own, is for unselfish people. Such people are willing to let others think in their own way. They are eager to make their work count for good. And they are always kind and true.

Only honest, kind, hard-working boys and girls grow to be the sort of men and women our country needs. Will you be one of these men and women?

TALKING TOGETHER

Is your class now able to talk things over in a more helpful way than at the beginning of the school year? If not, you should do something to improve your group talks. Read again "When You Make Plans" on page 27 and decide how to make your talks more interesting and useful. Then talk together about the answers to the questions below.

1. What are some of the things which show that a people is civilized?
2. What are some of the things that show that a people is primitive?
3. Do children in a civilized country sometimes have problems like those of Bogana, Rosita, or Jasim? Did those children work out their problems well?
4. What are some of the things which help a person to live happily with others, no matter where he lives?
5. Would you be a foreigner if you were a visitor in another country? Should we dislike people because they are foreigners?
6. What are some of the things that cause the ways of living of any people?
7. You have seen that the children of other peoples are much like you in many ways. They love their families and pets as you do, and they have many of the same problems. In what other ways are they like you?

USING YOUR GLOBE

As you read about the children of different peoples, you were asked to make dots on your globe to show where their homes are. Look at those dots now. On the map on pages 196–197, find a picture of a home to match each dot on your globe. Find the homes of three other peoples that you have read about in this book. Then close your book and tell which home each dot on your globe stands for.

WHERE DID IT HAPPEN?

Look at the homes pictured on the map on pages 196–197. In the sentences below, the children from those homes are talking. Read each sentence and try to guess in which of these homes the speaker lives:

Swiss	Eskimo	Desert Arab
Lapp	Egyptian	Amazon Indian
Congo	Mongol	Peru Indian

1. "I like to wash clothes in the cool stream at the oasis, after traveling far across the sandy desert."
2. "Our crops grow very fast in summer, because the sun shines all day and much of the night, too."
3. "I like to help my father make balls of rubber over a fire of palm nuts."
4. "My home is a pretty mountain chalet with beautiful furniture inside."
5. "I am learning to carve figures from wood, like those on the fine clocks sold to our many visitors."
6. "Mother and I have been grinding manioc meal, and baking cakes of it on hot stones."
7. "I often ride a camel, but I have never been on a horse, like the one our sheik rides on."
8. "I am learning to cut snow blocks and fit them together to make an igloo."
9. "I must not make my llama's load too heavy, or he will lie down and refuse to carry it."
10. "I live in northern Africa, near a great river that overflows its banks once a year."
11. "Our clothes of caribou skin have dried very stiff, but we will scrape them soft and white again."
12. "I help to grow manioc, sweet potatoes, bananas, and pineapples, but I am not an Amazon Indian."

13. "We take good care of our reindeer, and they give us milk to drink."

14. "While I am out on the rocky desert, I shall try to catch a baby gazelle."

15. "When we take our llama down the mountain to the fair, I shall sell this doll I am knitting and buy an orange."

SHARING THROUGH BOOKS

Children who are ill in hospitals would enjoy your stories and pictures about other peoples. Plan to put these stories and pictures into several books for them.

Divide the class into several groups. Each group will make a book about the ways of living of one of the peoples you have studied. Some pupils will write stories or poems about the children and their parents. Others will draw or cut out pictures of the people, homes, animals, trees, and plants. Make your book as interesting as you can.

You may wish to dress small dolls to go with each book. Dress a boy doll and a girl doll in the costume of each of the peoples. If you have no dolls, draw some on stiff paper or cardboard. Or you may be able to saw them out of thin wood.

Send your books and dolls to the nearest hospital which has children in it.

WHAT WORD IS IT?

Below are twelve meanings of words. Write their numbers on a sheet of paper. Then read each meaning and find the word which matches that meaning. It will be one of the words in the list below the twelfth meaning. After each number write the matching word.

1. To make something that has never been made before
2. People who study all the known facts about a subject and try to find out new facts about it
3. A change for the better
4. Another name for Holland
5. A test made for the purpose of discovering new facts or proving known facts
6. Greatly improved in one's way of living
7. A group of people which has been formed to use a fund of money for some good purpose
8. Not much improved in ways of living
9. A small section of a community
10. Something which has been made for the first time
11. A place where experiments are done
12. Having to do with the Netherlands

civilized	neighborhood	scientists
invent	improvement	experiment
Dutch	invention	laboratory
primitive	Netherlands	foundation

IS IT TRUE?

Write the numbers of the sentences below on a sheet of paper. After the number of each sentence write "Yes" if the statement is true or "No" if it is false.

1. All countries have the same natural resources.
2. Some people make better use of their human resources than others do.
3. People from many different countries have helped to make the useful inventions that we enjoy.
4. Natural resources will last forever.
5. All of the possible inventions and discoveries have already been made.
6. The work of just one person cannot be very important.
7. Human resources are of great value to the world.
8. Kindness is important to people all over the world.

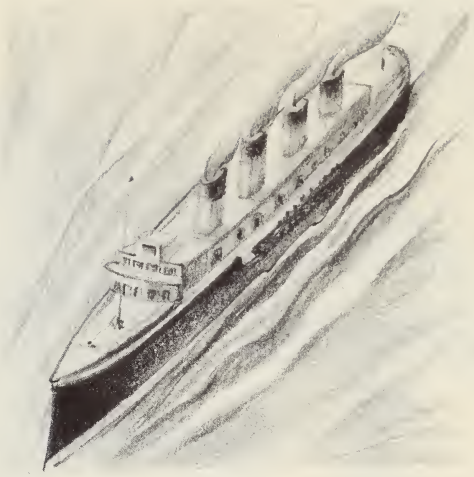
Talk together about the sentences above. Give facts that prove whether they are true or false.

RING AROUND THE WORLD

Ring around the world,
Taking hands together,
All across the temperate
And the torrid weather.
Past the royal palm trees,
By the ocean sand,
Make a ring around the world
Taking each other's hand.
In the valleys, on the hill,
Over the prairie spaces,
There's a ring around the world
Made of children's friendly faces.

—Annette Wynne

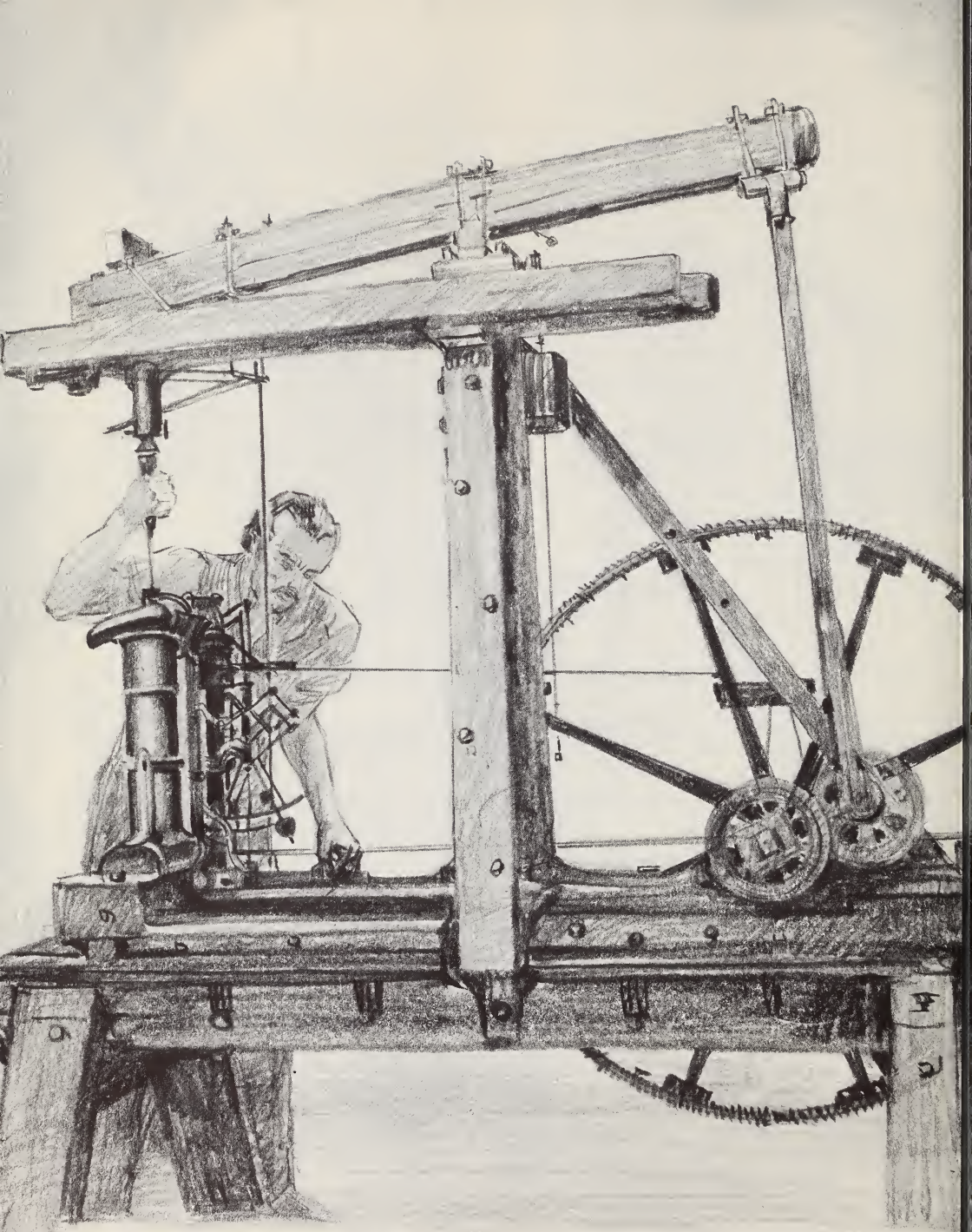
Young Thomas Edison working in his laboratory at home. He had two hundred bottles containing things he needed for his experiments. Edison is often considered the greatest inventor in history.



PART THREE

Finding Better Ways of Living

1. What kinds of power have helped man to do his work?
2. What improvements have been made in ways of travel?
3. What improvements have been made in the sharing of ideas?
4. What have you learned about the earth and its people?
5. How should what you have learned affect your thoughts and actions?
6. What helps the most in bringing happiness to a people?



James Watt did more than anyone else to put the power of steam to work. In 1769 he invented the first really successful steam engine. Here Watt is shown with one of his later steam engines.

Nature's Gifts of Power

Do you remember the difference between primitive peoples and civilized peoples? In Part Two you read stories about some of the primitive peoples who still live on our earth. You learned some of the reasons why they live the way they do.

Did you notice, as you read about these primitive peoples, how little help they have in doing their work? None of them use machines. Most of these peoples have animals to help them, but the Amazon Indians do not even have animals.

These Indians do have canoes, which are easier to paddle downstream than upstream. Flowing water helps to push a boat. The Amazon Indians use flowing water in another way, too. You will remember that they float their heavy logs downstream to the trader. But the rest of their work must be done without help. When they hunt, or work in their gardens, or carry loads on land, they must depend upon their own strength alone.

The Eskimos have dogs to pull their sleds, and the Lapps have reindeer. The Arab nomads use camels to carry loads, and the Peru Indians use llamas. But none of these peoples have trains or trucks or airplanes. They do not even have machines for spinning thread and weaving cloth. They make little use of any *power* besides that of their own bodies and the bodies of their animals.

Civilized peoples use many different kinds of power. You have read how the Swiss use their waterfalls for making electric power to run their trains. Civilized peoples have learned to use nature's gifts of power to improve many of their ways of living.

Man has learned about the different kinds of power very slowly—and he is still learning. Each time man learns to use a new kind of power, important changes take place in his way of living.

Human power was the only kind of power that primitive man knew at first. He had nothing to help him with his work except the strength and skill of his own body. If he wanted food, he had to gather it with his own hands. If he wanted to go somewhere, he had to walk or swim. If he took anything with him, he carried it in his hands, or on his back or head. If he wanted to send a message, some other person had to carry it.

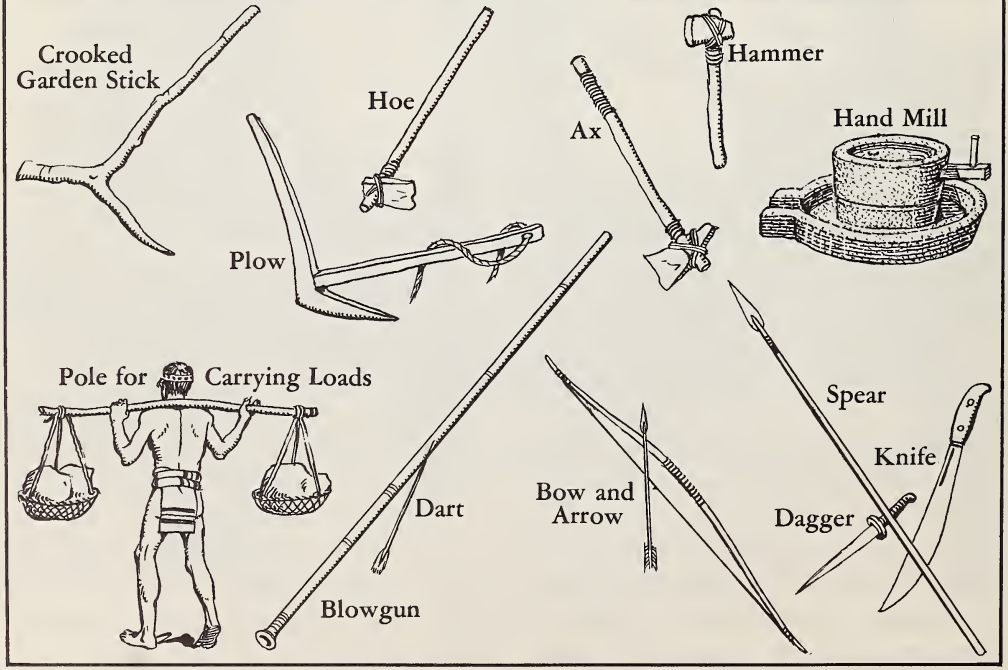
The next kind of power that early man made use of was that of the animals about him. Man soon learned to tame wild animals and to use them in getting work done. Animals have never stopped serving man. The people on our earth still make a great deal of use of animals.

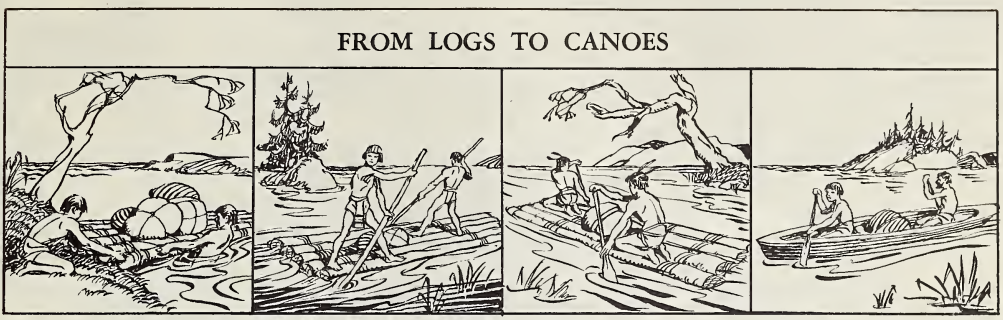
Making human power accomplish more work

Primitive man learned little by little to use nature's gifts to make his own power do more work. He could throw a stone farther than his arms could reach, and it would strike with force. He could beat on a hollow log or build a fire. Thus he could send messages across to near-by hills more quickly and easily than someone could carry them.

He figured out more and more ways to make the powerful forces of nature help

PRIMITIVE TOOLS AND WEAPONS





him with his work. He found he could use these forces for saving his strength and for doing things he could never do alone.

Primitive man learned to use nature's gifts in making tools and weapons. First he broke up the earth with a crooked stick to plant seeds. Then he found that a sharp stone fastened to the end of the crooked stick made a still better *plow*. A heavy stone, made sharp on one edge, became an *ax*. It would cut down trees which he could never break down by hand.

He made blowguns and bows and arrows. He made rough *mills* in which he ground grain into meal by pounding stones together. He put a pole across his shoulders and hung a load on each end of it. In that way he could carry much heavier loads than on his back or head.

Moving loads on land and water

Logs that were too heavy to carry could often be floated downstream. And it was found that floating logs, tied together, would bear large, heavy loads down a river. And if men stood on such a *raft* and pushed with long poles against the river bottom, it moved faster. In fact, men could push with poles and make the rafts go upstream or across lakes of still water.

Then someone discovered that poles, made flat at one end, would move the raft without touching bottom at all. The pull of the water against the flat part of the pole would send the raft along. So the *paddle* came to be used.

Logs were hollowed out and shaped at the ends to make *dugouts,* or canoes. These moved more quickly and easily through the water than the log rafts had done.

Man found that on land he could drag loads that were too heavy to carry. He also found that two or more men, working together, could move loads that one man could never move alone. So men began to use the *drag* for pulling loads on land. On the sea they used the *galley*. This was a boat rowed by a number of men working together. The pictures on page 232 show the drag and the galley.

Using metals for better tools

Primitive man made good use of wood and stone. But just the same it was a great day when he discovered metal. It is believed that copper was the first metal

Philip Gendreau

HUMAN POWER AND ANIMAL POWER

Human power is the cheapest kind in many parts of our world. The men above are pulling loads in China's largest city. In the picture below oxen are pulling a primitive wooden plow in Mexico.

Pitshke from Gendreau

used by man. He found that hot iron could be beaten into sharper knives, axes, and plows than any he could make of stone. Little by little he discovered other metals. He learned to mix certain metals together to make better and better tools with which to work. These made it possible for primitive man to put his own strength to better use than ever before.

But these tools and other things had no power in themselves. Men or animals still had to furnish the power to swing the ax, push the plow, or paddle the canoe. The only other force that primitive man knew how to use was that of running water. It floated his boats downstream and allowed him to let his paddles rest awhile.

WIND POWER

Through all the ages when man used only human and animal power, another great force was all about him. It was the wind. A poet once wrote:

"Who has seen the wind?
Neither you nor I;
But when the trees bow down their heads,
The wind is passing by."

Man could not see the wind, of course. But he could see the trees bow down their heads when the wind passed. He could feel the force of the wind against his body as he walked. And he could see the leaves being blown by the wind. The wind could make things go. But no one knew how to use its force.

Sailboats and windmills are still being used. The men sailing the boat below live on a large island north of Australia. The windmill on the right is used to pump water in the Netherlands.

James Sawders—Combine

Philip Gendreau

One day someone in a boat held up a piece of cloth or skin or bark. He found that the wind, blowing against it, would move the boat across the water. The wind could be made to do the work of a number of men with paddles. And so man learned to make a *sailboat.*

It was in a sailboat that Magellan's men made their great voyage around the world. It was by the use of sailboats that our own continent of North America was discovered. For hundreds of years men depended on wind power to get their ships across the waters of the world.

Wind was made to do other tasks, too. It is still at work today. You may have read that *windmills* are used in the Netherlands to keep the sea from flooding the land. Perhaps you have seen windmills at work pumping water on some farm in our own country. Wind power still has an important place in the work of men.

STEAM POWER

Another great source of power is *coal.* This hidden treasure lay buried in the earth for thousands of years. Coal was made from huge plants that once grew on the earth. Ages ago these plants were buried under the ground by the changing of the earth's surface. Slowly they were changed into the black fuel known as coal.

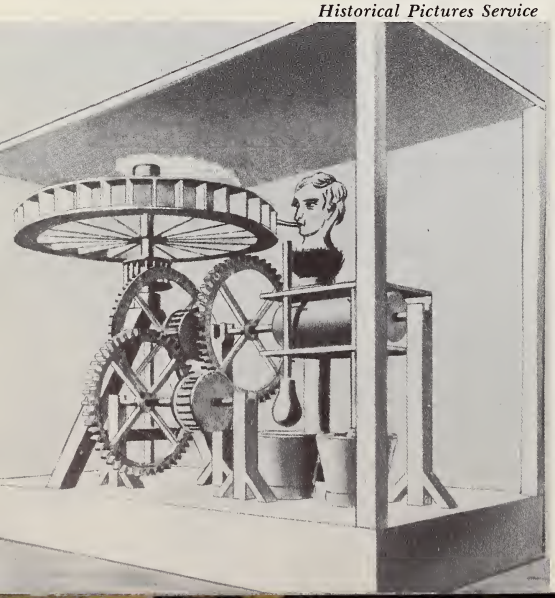
People discovered coal in places where it was near the surface of the earth. They found that when it was burned it would keep them warm and cook their food. But it was a long, long time before they were able to turn its heat into power.

The invention of the steam engine

Have you ever watched a pot of boiling water? The water is being turned into steam, and steam takes up more space than water. So the steam keeps pushing up the lid, trying to get out. The heat from the fuel that is boiling the water is being used to make something move.

The steam engine on the left was built over 300 years ago; the one on the right, 100 years ago.

Historical Pictures Service



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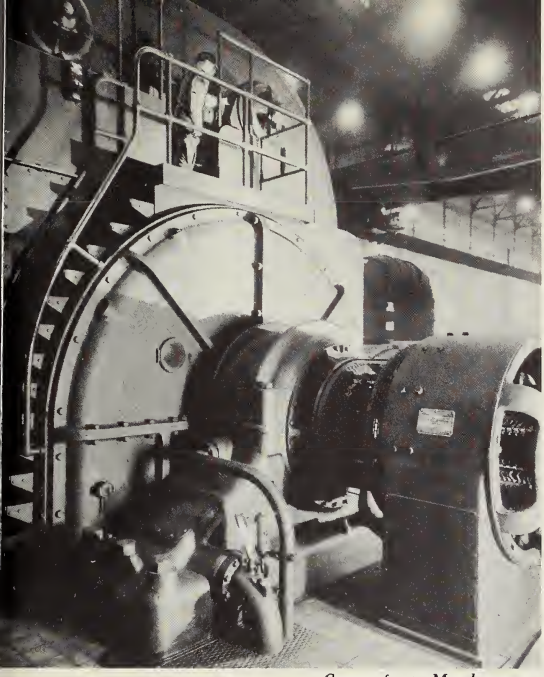


Carew from Monkmeyer

Charles Phelps Cushing

A steam engine is turning this machine to make electricity. Above is a modern steam locomotive.

Many men in different countries tried to use steam for power. But not until about two hundred fifty years ago was a *steam engine* made that would do real work. This machine, however, wasted a great deal of fuel. And so did the engines that were based upon it. James Watt, who lived in Scotland, found ways of improving these early steam engines. He worked out the ideas upon which our present steam engines are based. To Watt, more than to any other man, we owe the invention of the steam engine.

Steam engines had far more power than anything that had been used before. With their help men could quickly do a job that would have taken many months to do by hand. Steam engines could do some kinds of work that could not be done at all by human or animal power.

Many people eagerly began working with Watt's ideas. More and better steam engines were made. One man would make one kind of improvement, and someone else would make another. Men began to invent new kinds of machines that could be run by these powerful steam engines.

Steam engines soon turned the wheels of factories. They were used to pull the new steam carriage, or railroad train. *Steamboats* were found to be faster than sailboats and better able to travel in all kinds of weather.

More and more coal was needed for running steam engines. So men found new ways of digging this buried treasure from its hiding places below the earth's surface. Today civilized man considers coal one of the best natural resources. That is because coal can be turned into power for making things go.

Charles Phelps Cushing

James Sawders—Combine

Many machines use electricity. What kind of lights do you see? These electric trains are in Italy.

ELECTRIC POWER

Man may not be able to see the wind, but he has always been able to see the lightning. He saw it strike down trees, kill men and animals, and set fire to homes. He feared its mighty force. But for thousands of years he had no idea of making and using anything so powerful.

It was only about two hundred years ago that Benjamin Franklin thought of using this kind of power. Franklin was a great man of our own country. He was the first person to prove that lightning and electricity are the same thing. No one yet knows just what electricity is. But scientists have learned much about controlling and using it. Up to the present time no other kind of power has so changed man's way of living.

Michael Faraday, an English scientist, found out more about electricity than any other man. For one thing, he discovered a way to produce an *electric current*. Though his discoveries were very important, he never tried to make money from them. He gave them to the world. Millions of dollars have been made from inventions which other men have based upon his discoveries.

Thomas Edison, a great inventor of our own country, was one of those who made use of Faraday's work. He invented an electric railway for carrying passengers and goods. He invented an *electric motor* that was far better than any which had been made before. This motor had great power for making things go.

Electricity is used for a great many new inventions and labor-saving tools. Every day men are finding new ways of using its wonderful power. The pictures on this page show some of the ways in which electricity has improved man's way of living.

You have learned that running water was one of the first of nature's forces that man learned to use. You remember that primitive man would ride on floating logs tied together, or would float logs down the streams. But primitive man did not know much about using the power that comes from running or falling water.

Finally someone invented the *water wheel.* With the help of the water wheel grain could be ground. People could save themselves the hard work of pounding seeds into meal or flour by hand. The pictures on this page will show you how a water wheel works.

Using waterfalls to produce electricity

Water wheels began to be used to furnish power for doing many other kinds of work. But it was not until after the discovery of electricity that men found their greatest use of falling water. It could be used to produce electricity! This discovery gave power to some parts of the world that had had little power before.

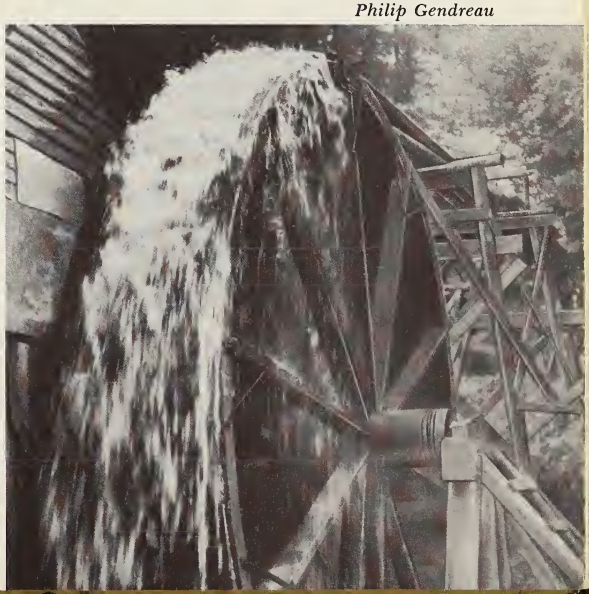
The invention of the steam engine had brought only a few trains to Switzerland, for this country has no coal. But when men learned to use waterfalls to make electricity, trains soon began to climb the mighty Alps. The mountains of Switzerland are full of waterfalls. The people were quick to make use of them for power to run electric trains. These waterfalls had been thought of only as beautiful scenery. But they became the great source of power for running the machines of this busy country.

When men saw that waterfalls could be used to make electricity, they wished for waterfalls in places that had none. After a time they began to dam great rivers and make waterfalls where they were needed. Some of the world's greatest sources of power are these man-made waterfalls.

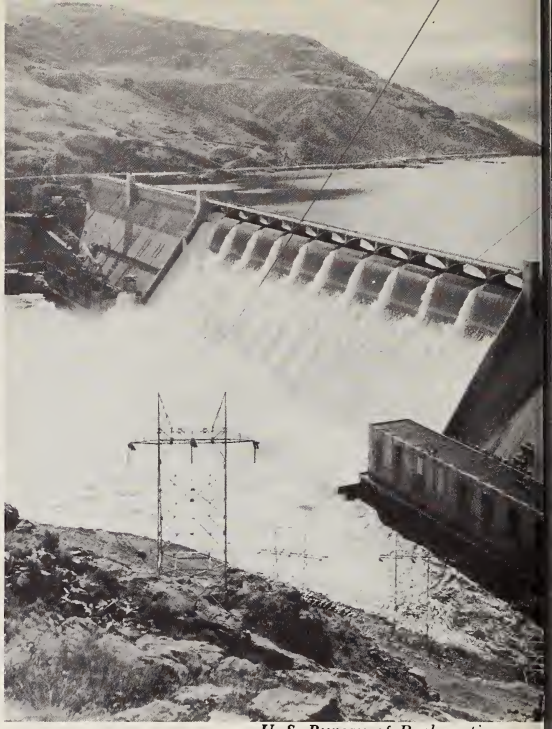
The left-hand picture shows two water wheels turned by the same waterfall. The little wheel at the left churns butter, and the larger one grinds corn. At the right is another water wheel.

Godsey from Monkmeyer

Philip Gendreau



Charles Phelps Cushing



U. S. Bureau of Reclamation

A natural waterfall and a dam in our state of Washington. Both falls are producing electricity.

OIL FOR POWER

Coal is not the only source of power that is found in the earth. Beneath the earth's surface another treasure was hidden from the eyes of man for ages and ages. This treasure was *petroleum,* or oil. Because of the great value of petroleum to civilized man, it is often called "black gold."

Scientists are not sure of how petroleum was formed. Many believe it was made from sea plants and animals, buried ages ago at the bottom of the sea. Little by little the action of salt water and other things changed the plants and animals into oil. This oil, it is thought, drained into soft rock and beds of sand. It formed great supplies below the earth's surface. There it stayed until men found it and learned how to use it for heat and power.

Men were a long time in doing that. Sometimes oil would come to the surface and lie on the ground or on the top of water. It had a bad smell. Sometimes when wells were dug, they filled with oil instead of water. People didn't like this. They often moved away from a place where oil was found.

Using oil to make heat

Finally it was discovered that this oil would burn. Men have always been interested in anything that can be used for fuel. People began to experiment with petroleum. But there was one great trouble—the oil burned too quickly. It caught fire with such sudden force that it

was said to *explode*. It was dangerous to handle.

Men learned, however, that by slowly heating the oil they could draw off the most dangerous part as a gas. What was left they could heat still more and draw off another gas that became *kerosene*. Many uses for kerosene were found, but the first gas was thought to be of no value. It was carefully burned so that it would do no harm to anyone.

The invention of the gasoline engine

Perhaps you have guessed that this gas which was being wasted was a form of *gasoline*. Today we use it for running automobiles and airplanes and for many other purposes. Men learned to control the *explosions* made by gasoline and to use the force of the explosions to run engines. They found ways of making the *gasoline engine* do part of the world's work.

One new machine after another was invented. These machines were run by the power produced by gasoline and other petroleum oils. New ways of digging oil wells and pumping the oil were invented. Some parts of the world that had been poor became suddenly rich because oil was found there.

A kind of oil-burning engine called the *Diesel* (dē'zĕl) has given still greater speed to modern boats and trains. It is the Diesel engine that pulls many of the fastest trains of today.

Any nation that has oil counts it as one of the most valuable of its natural resources.

Kerosene lamps are still used in some parts of our country. The train below has a Diesel engine.

Philip Gendreau

Union Pacific Railroad

A STILL GREATER POWER

Very recently men have learned how to produce a far greater power than the world has ever known before. This power is so great, in fact, that men have dared to use it only a few times. This is *atomic power,* or the power that is in the *atom.*

Everything in our world is made up of very, very small bits, called atoms. These atoms are so small that they have never been seen by anyone. If two hundred million atoms were placed in a row, the row would be only one inch long!

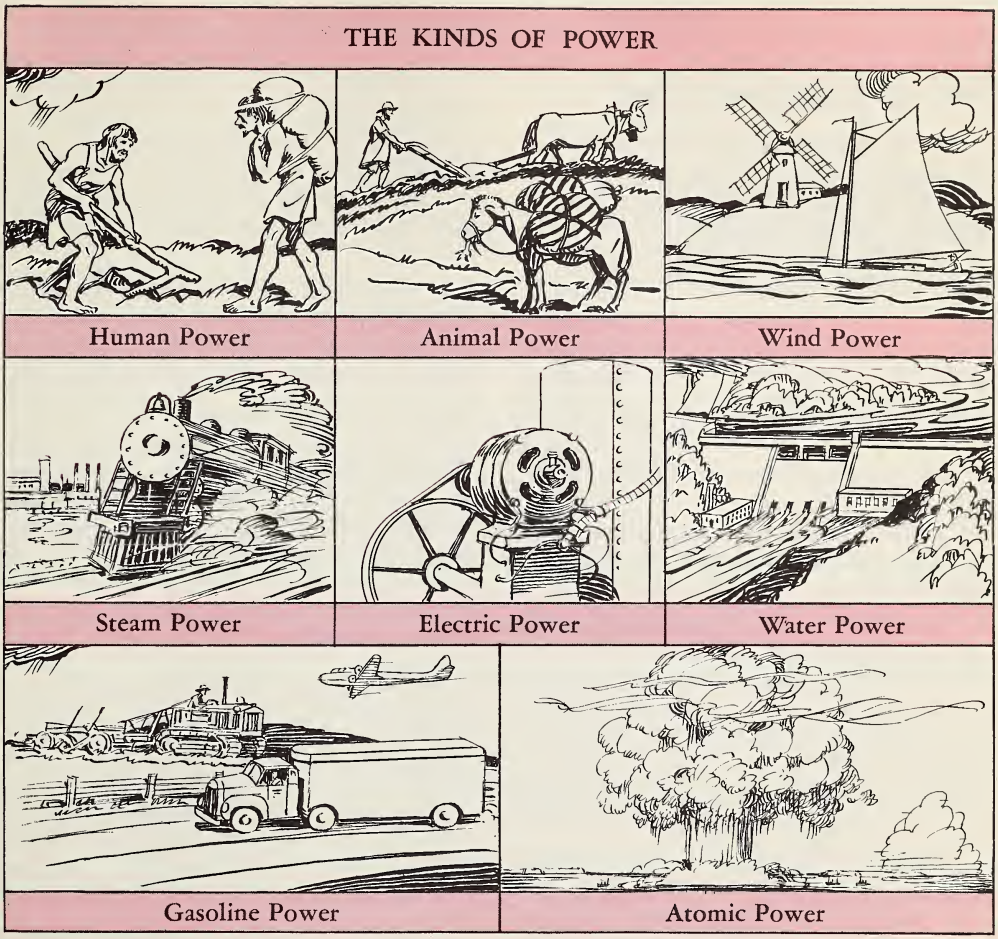
Each of these atoms, tiny as it is, is made up of still smaller parts. In the very center of each atom is a force that draws the other parts together. For a long time men have known what the atom is like. But they could not find a way to break the force that holds the parts of the atom together.

Lately a way has been found to break the force that holds the parts of certain atoms together. This causes the parts to explode, or to fly apart with great force.

The explosion of just one of these atoms does not produce much power. But as one atom explodes, the flying parts of it hit other atoms and cause each of them to explode. This goes on and on. Great harm can be done if these exploding atoms are not held in check. And there seems to be no end to the amount of power that can be produced by these exploding atoms. It is believed that in the future a great many machines will be run by atomic power.

This boy wants to become a scientist. Someday he may discover a better way of producing power.

James Sawders—Combine



Our government has set up a committee of men to head the study of atomic power. They are helping to work out an understanding of the control and use of this wonderful kind of power. The work of these men is one of the most important things going on in the world today.

Learning more about power

In these pages we have had room to tell only a small part of the story of power. Your library probably has some good books about power. They will tell you more about the different kinds of power and the men and women who have discovered them. You will also learn more about power in later grades.

In spite of the many great discoveries and inventions, there is much more to be learned about power. It is now fairly certain that the greatest discoveries about power will be made in the days to come. Perhaps you yourself will discover a better way of producing power for doing the work of the world.

WHAT IS THE MISSING WORD?

On a sheet of paper write the numbers of the sentences below. After each number write the word or words that are needed to finish the sentence correctly.

metal	power	electric
coal	gasoline	animals
drag	atomic	windmills
tools	raft	waterfalls
explode	galley	petroleum

1. Civilized peoples have learned to use eight kinds of ___.
2. Most primitive peoples make little use of any power except their own and that of their ___.
3. Gasoline, kerosene, and the oil used in Diesel engines all come from ___.
4. Two kinds of fuel that can be turned into power are ___ and ___.
5. Men now make use of waterfalls to produce ___ power.
6. Men sometimes make ___ by building dams across streams.
7. In the Netherlands ___ are used for pumping water.
8. People can do more work with the same amount of power if they have good ___.
9. Man was able to improve his tools greatly after he discovered ___.
10. Early man used the ___, the ___, and the ___ for moving loads on land and water.
11. The greatest power yet discovered by man is ___ power.
12. When atoms ___ they produce atomic power.

THINKING ABOUT PICTURES

1. What three weapons in the chart on page 206 are used by the Amazon Indians? Find these weapons in the chart on page 64. How does the hand mill on page 206 work?

2. Compare the water wheel on page 213 with the one on page 147. What kind of work does the water wheel on page 147 do? Explain how it does this work. What kind of work is done by the water wheels on page 213? How is this work done?

3. What three ways of plowing are shown in the chart on page 217? What three uses for gasoline do you see? What way of producing electricity is shown? What way of using electricity is shown? Do you know where this atomic explosion took place? The ships below it will help you to guess if you are not sure. Notice how small these big ships look. What does that tell you about the size of the explosion?

WHO WAS HE?

The sentences following each number below tell about a great inventor. You can find his name somewhere in this chapter. Read about each man and try to name him.

On a separate sheet of paper write the numbers 1 to 5. After each number, write the name of the man described. You may wish to look up more about one of these men and report to the class what you found.

1. He lived in Scotland about two hundred years ago. As a child, he liked to make things. When he grew up, he became a maker of fine instruments. He was always thinking of ways to improve them.

Many men had thought of making a steam engine, and some had tried it. But none of their steam engines worked very well. This man studied their engines and tried to see why they had failed. He went to work on the problem of making a better one. The steam engine he invented was the first one that was really successful. It put the power of steam to work for the world.

Who was he?

2. He was born in the state of Ohio, in the United States of America. He had his first laboratory when he was seven years old. A friend had given him a book about a scientist, and he decided that he would become one. At first he just pretended to work in his laboratory, but soon he bought materials for real experiments. He was never again without a laboratory.

From his laboratory came more than 1200 inventions. Among them were the electric light bulb and an electric motor.

Who was he?

3. He was born in 1706 in what is now the United States. We honor him as a great statesman, writer, scientist, and inventor. One of the things we remember him for is his work with electricity. He invented a lightning rod to protect houses from lightning.

This man believed that lightning and electricity are the same thing, and he did an experiment to prove it. During a thunderstorm he stood in a doorway and flew a silk kite which had a wire fastened to the top. At the bottom of the long kite string was tied a metal key. A silk ribbon went from the key to his hand. He was very careful to keep this ribbon dry.

The lightning came down the wet string to the key and then jumped to a wire that was in a jar of water close by. The electricity in the jar rang a bell that was connected with the wire. He had used a form of electricity to ring a bell before. So this experiment proved that lightning is electricity.

Who was he?

4. He was born in England in the year 1791. About the time he grew up, men were talking about a new kind of power called electricity. They had found out that it was the same thing as lightning and had learned to control it in some ways. But they did not know how to make much use of it.

He read and studied everything he could find about electricity. He believed this great power could be made to help man do the work of the world. At last he invented a way to produce an electric current.

Who was he?

5. He was born in Germany in 1858. You may not have heard of him, but you have read about an engine that is named for him. The engine bears his name because he invented it.

It is an oil-burning engine that helps trains and boats to run much faster than they ever did before. Men now use this engine for other purposes, too.

Who was he?

WHERE DID HE LIVE?

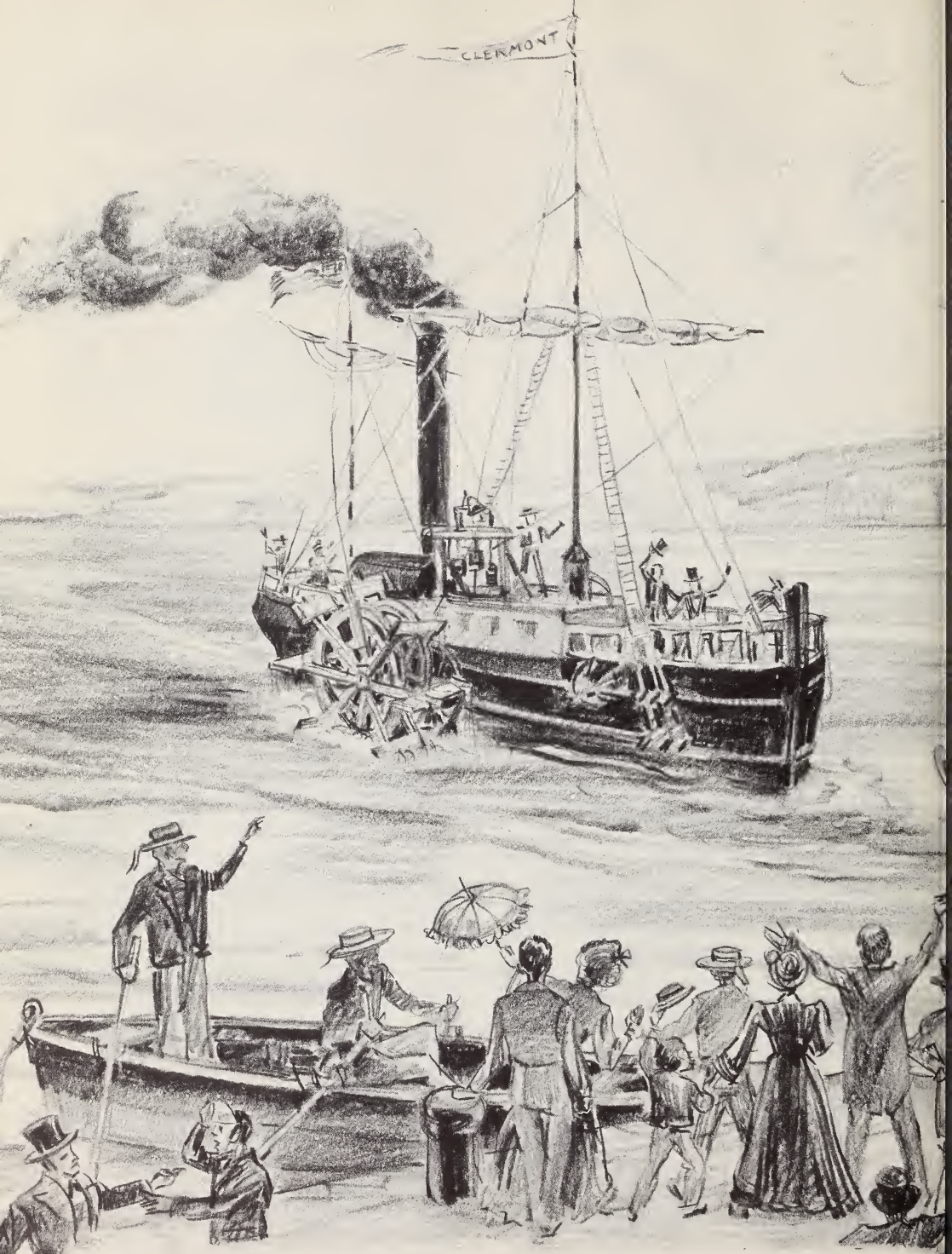
The five great inventors described above lived in three different countries. You can find one of these countries on the map on page 176. Another one is shown on the map on page 20.

England and Scotland are really part of the same country, the United Kingdom. But they are sometimes thought of as separate countries, as they once were.

If you have a large globe or a map of Europe in your classroom, find England and Scotland. They are on a large island near the western coast of Europe. Look for Germany also. Then point out on your own globe where the United Kingdom, Germany, and the United States are located.

PICTURES FOR YOUR CLASSROOM

Make pictures for your classroom showing ways in which the different kinds of power are used. Here are some suggestions for your pictures: primitive gardening, hunting, canoeing, and pack carrying; sailboats, windmills; steam trains, steamboats; electric trains, electric machines used at home; water wheels, dams; airplanes, cars, trucks, tractors, Diesel locomotives. Each picture should tell the kind of power being used.



Robert Fulton's *Clermont* was the first really successful steamboat in the United States. The people who called it *Fulton's Folly* changed their minds when they saw it steam up the Hudson.

How Man's Ways of Travel Have Changed

No one part of our earth has all the natural resources that could be used for people's comfort and pleasure. Everywhere we go, we find people trading things of which they have plenty for things which they need or want. Goods that are to be traded must be carried from where they are produced to where they are needed. So *transportation,* or the carrying of goods or people from place to place, is very important to civilized man.

Nations with good transportation can make better use of their natural resources than nations with poor transportation. We know that Peru cannot make the best use of her metals because it is so hard to *transport* them.

The comforts of civilized peoples depend on the ease with which goods are brought from all parts of the world. When our country entered World War II, we soon found that such foods as coffee and bananas were becoming scarce. The seas were no longer safe for our merchant ships. And we were cut off from the faraway places that had been furnishing these articles.

We have seen that primitive peoples do not depend on transportation for as many of their needs as civilized peoples. The things that primitive peoples find around them are used for their food, clothing, shelter, and fuel. The few things for which they trade simply add to their comfort and pleasure. But civilized peoples depend on other parts of their own country and of the world for most of their needs. They can do this because of the fine means of transportation they use.

The story of how transportation has improved since early days is an important chapter in the history of civilized man.

We have seen that early man carried goods in a pack on his back or head. Some peoples still do this. We have also seen that primitive man tamed wild animals and used them for carrying loads. We have read that men learned to use the drag for pulling heavy loads. This helped men and their animals to carry larger and heavier loads for greater distances.

The invention of the wheel

But the first great improvement in transportation came with the invention of the *wheel*. We do not know just when or by whom the wheel was invented. Someone discovered that, if poles were placed under a heavy stone, it could easily be pushed as the poles turned. But they had to be picked up from behind and put under the front of the stone, again and again.

The moving of these poles was hard work. So someone thought of putting a pole through two round pieces cut from a log. These round pieces were wheels. The weight to be moved rested on the pole while the wheels turned around near each end of the pole.

These first wheels were made of solid wood and were very rough. But they were the beginning of one of man's greatest inventions. Almost all the machines used by civilized man make use of wheels. We could not count the wheels that turn round and round each day, doing the work of the world.

These women of Portugal carry loads on their heads. The man below carries his load on his back.

Mels from Cushing

James Sawders—Combine

Historical Pictures Service

Stagecoaches used in the West a century ago.

James Sawders—Combine

A three-masted sailing ship from Portugal.

Improvements in land transportation

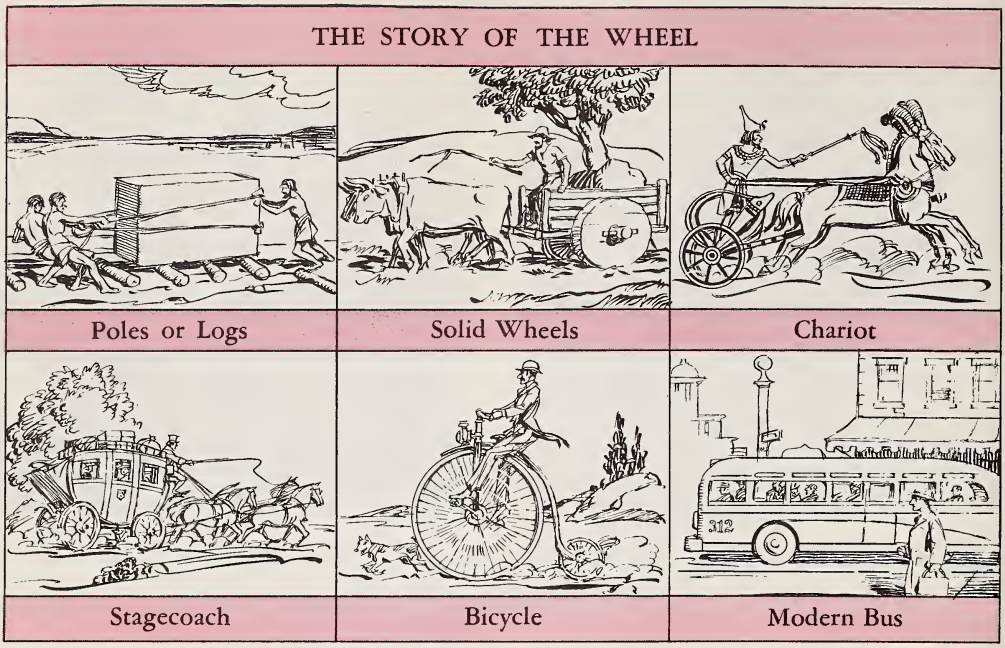
The drag became far easier to pull when it was placed on wheels. It was further improved, and other kinds of wheeled *vehicles* came into use. Vehicles are things for carrying people and goods. When vehicles had wheels, they could move much faster and carry much heavier loads.

The people who traveled in these early vehicles found them very rough riding. The aches and pains that followed a ride in one of them made someone think of putting springs under them. At first the springs were very simple. But they made the vehicles ride a little more smoothly. They were the beginning of the many springs that take the bumps and jars out of our lives today. It was not, however, until smoother roads were built that riding in wheeled vehicles began to be a real pleasure. Now we can enjoy traveling.

Improvements in water transportation

While these improvements in land travel were being made, changes in boats were also taking place. Men learned more and more about the best materials for building ships. And they learned how to shape them so they would be faster and safer in the water. Larger ships were built to carry heavier loads.

After the value of a sail was discovered, men experimented and found that more than one sail was useful. They learned to build boats with many sails. Ships came to have from one to seven *masts,* or upright poles, to which the sails were fastened. Sailors became very skillful in handling ships with many masts. And the men who built the ships were among the finest workmen in the world. Sailing ships, moved by the power of the wind, made longer and longer trips across the earth's great seas.



IRON HORSES

It was wonderful to have the help of the wind to move great loads across the water. Big cities grew up around good *harbors*. Harbors are protected places where ships may safely dock. Cities which are built around river, lake, or ocean harbors, where ships can land their cargoes, are called *ports*. Ports became the most important cities of the world.

But many of the heavy loads men wished to carry were not close to rivers or lakes or oceans. For example, coal and iron were found in mountains, where the streams were not deep enough for boats. After the steam engine had been invented, more coal was needed than ever before. More and more uses for iron were also being found. Men could not mine these heavy materials fast enough.

Wooden tracks were built for the wheels of the coal carts to run on. It was found that mules and horses could pull the heavy carts more easily when the wheels ran on tracks.

Then someone tried putting strips of iron on the wooden tracks. This newer kind of track proved to be smoother and better than a track of wood alone. These tracks for carts were called *railroads*.

The invention of the locomotive

But it still took many horses to pull the heavy loads of coal and iron, even on the new railroads. Finally someone thought of using the power of steam to move these loaded carts. A steam engine was built on wheels, so that it could run on the

tracks of the railway. This first *locomotive* was made in England about one hundred fifty years ago. It was found that a locomotive could pull several heavy carts of coal at one time. This was a great improvement.

Other locomotives were built. One of them was called *Puffing Billy*. Finally an inventor named George Stephenson made a still better engine called the *Rocket*. It carried thirty-six passengers and went at a speed of thirty miles an hour. It was Stephenson's *Rocket* that won people over to the idea of traveling by train. Other trains run by steam were soon in use.

These early trains had no springs, and riding in them was a rough adventure. Not many people were willing to try it at first. But more and more improvements were made, and today railroads are one of the best means of transportation.

STEAM IN PLACE OF SAILS

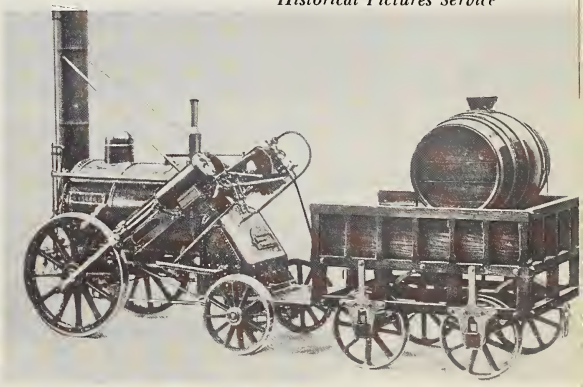
Even before trains were first pulled by steam engines, men tried to run boats with steam power. Most people thought that the idea would not work. Steam engines could not be used to drive boats, they said. Boats were not steady enough.

But there is always someone who dares to dream. There is always someone willing to work long enough and hard enough to make his dreams come true. The first steamboat that worked was built in our country in 1787. It had paddles on the

Below is an early horse-drawn railroad car. At the right is Stephenson's *Rocket*, the first modern locomotive. The *Tom Thumb* and the *Atlantic* were built and used in the United States.

Bettmann Archive; Historical Pictures Service

Historical Pictures Service



sides. The next year two men in Scotland made a steamboat with a *paddle wheel* on each side. Other steamboats were built.

The real beginning of steamboat travel

An American named Robert Fulton saw a paddle-wheel steamboat in Scotland and decided to make one himself. He built a successful steamboat in France. When he returned home, he planned a bigger and better one than any that had been built. He thought such a steamboat would soon pay for itself. So he set about carrying out his plan. People laughed at Fulton and tried to discourage him. But he worked on.

At last the steamboat was finished and ready for a trial on the Hudson River in New York State. The boat was named the *Clermont*. But the people who gathered on the banks of the Hudson made fun of it and called it *Fulton's Folly*. The steam engine began to turn the great paddle wheels on each side of the boat. *Fulton's Folly* moved slowly up the Hudson River. The people on the river banks stopped laughing to stare in wonder. The day of the steamboat had begun. There is a picture of *Fulton's Folly* on page 220.

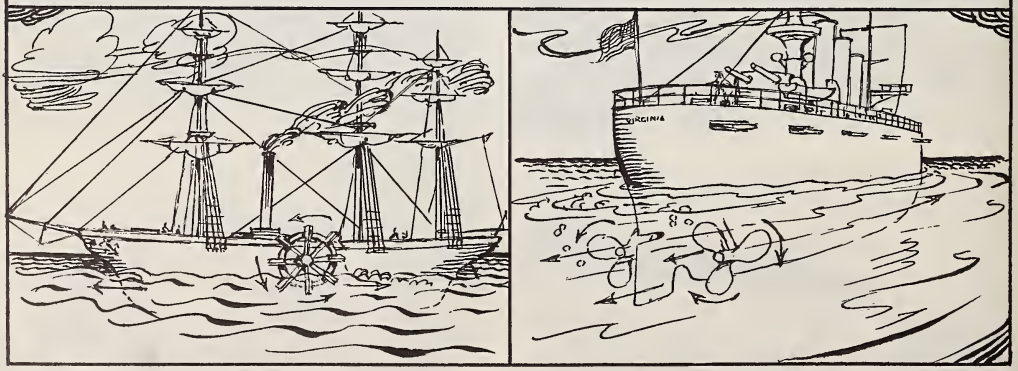
Developing better steamships

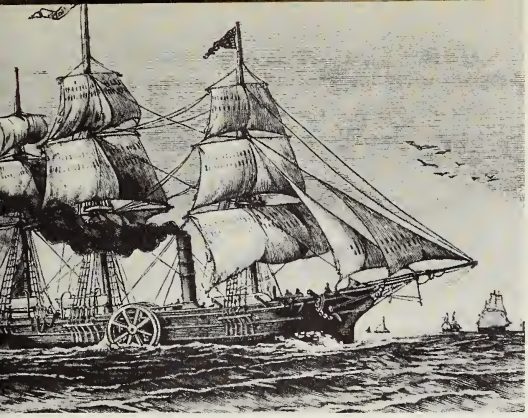
The first ship to make use of steam in crossing a great ocean was the *Savannah*. It sailed across the Atlantic Ocean from our country to England. That was more than one hundred twenty-five years ago. But the *Savannah* did not use steam entirely. It also had sails.

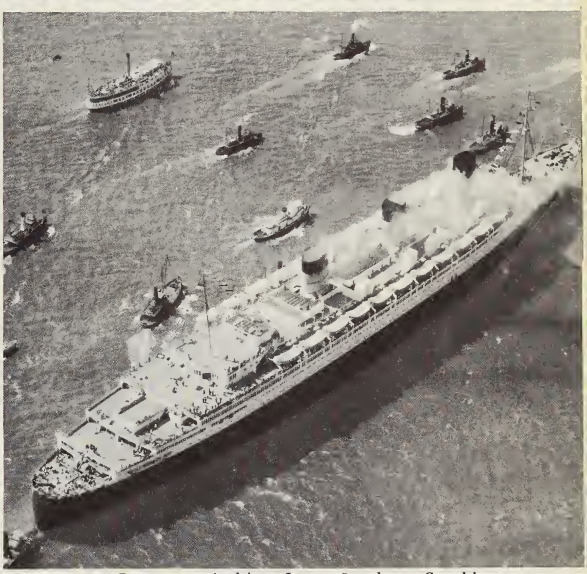
One of the earliest ships to use steam power for the entire trip across the Atlantic was the *Sirius*. It sailed from England to New York in 1838, carrying a hundred passengers. The *Great Western* made the trip from England at the same time. It arrived in New York only a few hours after the *Sirius*. Soon steamships were making regular runs across the wide oceans, as well as up and down rivers.

After a time more modern engines took the place of those used in earlier days. The *screw propeller* also took the place of the paddle wheel. A screw propeller

PADDLE WHEEL AND SCREW PROPELLER







Bettmann Archive; James Sawders—Combine

Bettmann Archive; James Sawders—Combine

At the top are the *Savannah* and the *Sirius*. Both had side paddle wheels. The river steamboat above had its paddle wheel at the back. The *Queen Mary* is one of the world's largest steamships.

is somewhat like a pin wheel that is made of paper. This propeller is built into the back of the boat and connected with the engines. It spins very fast in the water and in that way drives the boat ahead.

The steamship is still one of civilized man's most important means of transportation. Different kinds of steamships serve the needs of the world in many different ways.

THE HORSELESS CARRIAGE

The next great step in the improvement of transportation was the invention of the gasoline engine. Men in England and France had experimented with "horseless carriages," or *automobiles,* run by steam engines. But these were not really successful. It was not at all easy to take along enough wood or coal to keep them going.

Toward the end of the last century a horseless carriage run by a gasoline engine was built in Germany. Other gasoline automobiles were made. About the same time people were experimenting with carriages run by electricity. An improved kind of steam automobile was having a good deal of success. But gasoline cars became more successful than those run by either steam or electricity. In most of the civilized countries men began to experiment with this new kind of carriage run by gasoline.

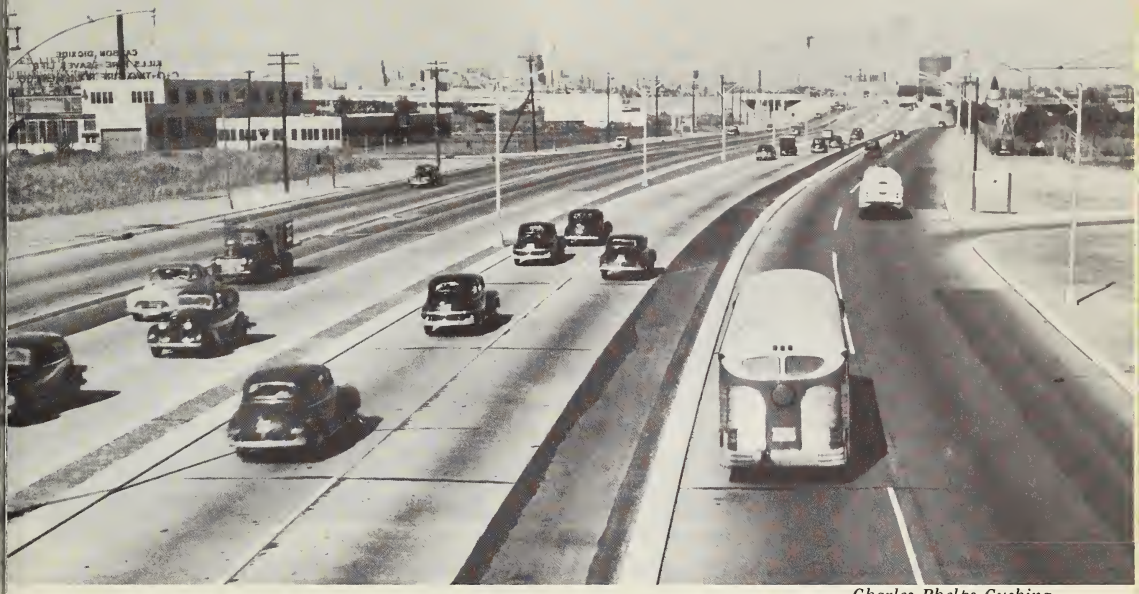
The first automobile to be built in the United States was finished about the year 1893. From then on, faster progress was made in this country than in Europe.

Today automobiles are used throughout the world. Many companies make automobiles, both in our own and in other civilized countries. Automobiles, trucks, and buses, run by gasoline motors, fill our streets. Gasoline has provided an excellent way of transportation.

With the coming of automobiles, roads had to be improved. State and national governments began to build smoother roads. Today the building of roads is an important business of the government. The wealth and progress of a nation depend to a large degree upon its system of roads.

Henry Ford at the wheel of his "Model K" automobile, which was made in the years 1906 and 1907.

Historical Pictures Service



Charles Phelps Cushing

This New Jersey superhighway has eight lanes for cars. Route 1 goes from Maine to Florida.

MEN ON WINGS

Once upon a time, not so many years ago, there was a man who had four sons and a daughter. Every day he would read to them. One day they heard him read from the Bible:

"They shall mount up with wings as eagles;
They shall run and not be weary;
And they shall walk and not faint."

The two younger boys looked at each other. With wings as eagles? Could it be that men would ever fly through the air like eagles? No one ever had—not at that time. Men had flown with balloons but not with wings, though many had tried. With wings as eagles! It might be a good idea to look at their bird book and find out how an eagle flies.

So Wilbur and Orville Wright got out the bird book. They read it for a while. Then they put it aside and went back to making bows and arrows, kites, and water wheels. These two brothers were always making something interesting.

How the Wright boys became interested in flying

One day their father brought home a new toy. It was called a *helicopter* (hĕl'ĭ-kŏp tĕr), he said. He opened his hands and there was a flash of color and a buzz. The tiny thing rose to the top of the room and hung there in the air for a few seconds. Then it slowly settled to the floor. It was just a little thing, made of a stick, two corks, a piece of paper, and a rubber band. But it flew!

Bettmann Archive

Charles Phelps Cushing

Otto Lilienthal in his glider in Germany and one of the Wright brothers in a glider at Kitty Hawk.

The boys seized it with eager hands. For many an hour they studied it and played with it. Finally they took it apart to see how it worked. The little flying toy set them to thinking again. For they had almost forgotten about the eagles and their wings.

When the two boys grew up, they started a bicycle shop. They kept on making all kinds of things.

One day Orville was sick, and Wilbur was sitting by his bed. They had been reading in a newspaper about a man in Germany who had been killed while flying a *glider*. He had made the glider himself. A glider is an airplane without any engine.

"Do you remember the helicopter that Father brought us one time, Orville?" asked Wilbur.

Oh, yes, Orville remembered it well enough.

"I believe there is something to flying after all," Wilbur went on. "I'll run down and get that bird book we used to read so much."

They read and studied and argued all over again. At last their minds were made up. Then they did a strange thing!

What Wilbur and Orville were doing out in their shop

"Those Wright boys are 'crazy,'" the neighbors began to say. "Wilbur is out in the back yard with a sewing machine and a lot of cream-colored cloth. And Orville is in the shop pounding away for dear life. He is working on some queer sort of thing made of rods and sticks. I don't know what their father can be thinking of to let them go on so!"

But there was one person who did not think that the Wright boys were crazy. That person was their sister, Katharine Wright. Whenever she had time to spare, she was out in the shop helping with their

queer work. Part of the money she earned in teaching school was used to buy cream-colored cloth and rods and sticks. She believed that her brothers would succeed in what they were trying to do.

Maybe you have guessed by now that they were building a flying machine. If you have, you are better at guessing than the neighbors were. For when the brothers closed their shop and went away, nobody knew what they were up to.

"They've gone on a vacation," their sister told the neighbors.

Why they went to Kitty Hawk

Yes, they were gone, and nobody knew where. With them had gone the cream-colored cloth and the sticks, wire, screws, nails, and bicycle tape. They had gone to a place called Kitty Hawk. It was a lonely stretch of sand on the coast of North Carolina. Find North Carolina on the map on page 25.

One reason they had chosen Kitty Hawk was because it was lonely. There would be nobody there to bother them. Also, they had written to the Weather Bureau at Washington and asked where they would find the steadiest, strongest winds. The answer was at Kitty Hawk and the country around it.

So to Kitty Hawk they went. They put up a tent to live in. Then they took out their cloth and sticks and wire and other things and built a glider with two wings.

The first airplane flight, December 17, 1903, at Kitty Hawk, North Carolina. Orville Wright is in the plane, while Wilbur is on the ground directing the plane. They flew for 59 seconds.

Bettmann Archive

Since a glider has no engine, it must be started from the top of a hill. There were plenty of sand dunes at Kitty Hawk from which to start.

The first trial was a failure. The glider simply refused to take off! They made some changes and then tried again. This time they succeeded in taking off from a small sand dune. They stayed in the air for twelve seconds! The glider landed safely, and they tried again and again. Now the brothers felt sure that flying was possible. But they must make a better glider than the one they now had.

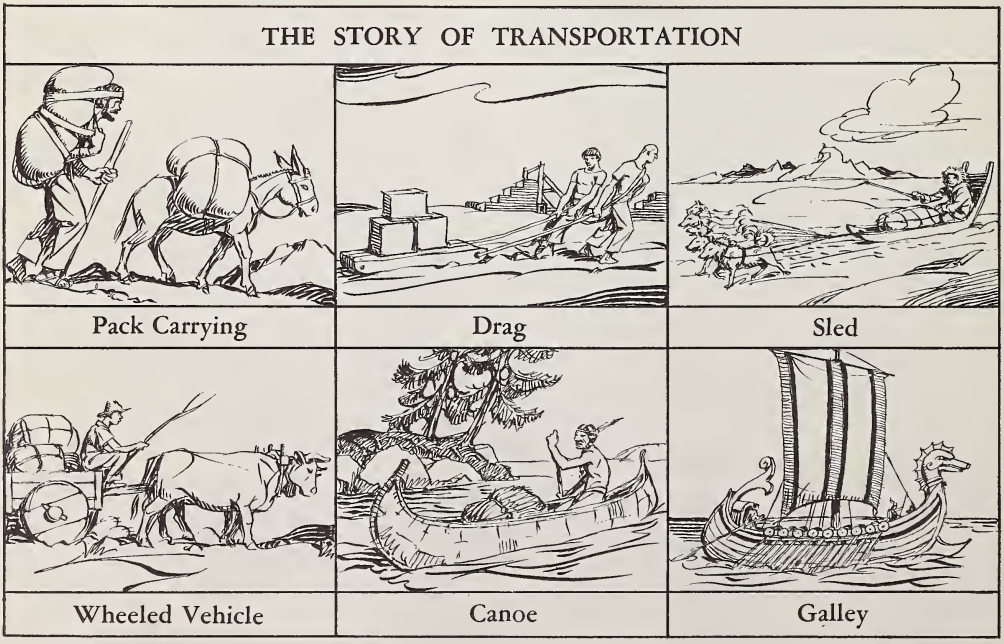
Success at last!

They went back home to their bicycle shop. But all the time they could spare was spent on improving their glider. It would take too long to tell about the many times they rebuilt it and tried it in the air. They changed and experimented and changed again. And whenever they had a chance, they returned to Kitty Hawk to try it out. Their sister helped them all she could and gave them money for the things they needed.

They decided that an airplane should have an engine. So they worked for a long time on that idea. They finally built a gasoline engine that was just right for their plane. Then they had to figure out a better way of starting the plane. Oh, there were so many things to be figured out that almost anyone else would have stopped trying. But not the Wrights.

One December day in 1903 a member of the Coast Guard came running in to the station near Kitty Hawk. "They did it!" he shouted. "They really flew!"

And they had flown! The airplane



with a gasoline engine had stayed in the air almost a whole minute. It had flown more than one sixth of a mile. The new engine was just what was needed!

Not many people knew about this airplane flight. And those who knew didn't think much about it. The Wright brothers sent home a telegram. Their father hurried down the street to the newspaper office.

"My boys flew!" he said. "Here's a little piece about it that I'd like to have you put in the paper."

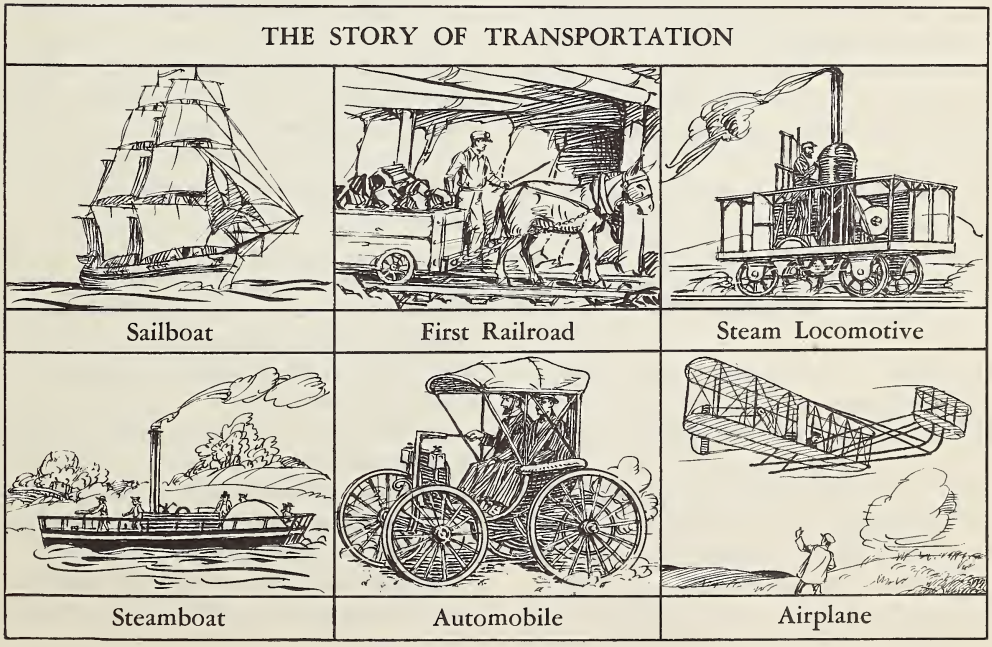
The newspaperman looked the story over. "Fifty-nine seconds, eh?" he said. "If it had been fifty-nine minutes, it might be worth talking about."

But the newspaperman was wrong. Those fifty-nine seconds in the air were worth talking about. For what happened at Kitty Hawk that day in 1903 was the real start of successful flying. It put the world on wings.

Within five years the Wright brothers had improved their airplane so much that they won a $25,000 prize with it. The prize was offered by our United States Government for a successful airplane flight. The winning plane had to carry two men, stay in the air an hour, and travel forty miles an hour. Wilbur and Orville Wright easily won the prize.

From then on, airplanes could not be built fast enough. More and more improvements were made by many people.

But we know that the airplane was really born at Kitty Hawk on December 17, 1903. A monument to the Wright brothers stands there today. But Orville said, "Whenever you talk about the Wrights, remember that there were three of us. Don't forget our sister."



DO YOU REMEMBER?

On a separate sheet of paper write the numbers of the unfinished sentences below. After each number, write the word or words that will finish the sentence correctly. If you do not remember the right words, look through pages 221–233 and find the answers.

1. The very first railroad tracks were made of ___.
2. The first railroad cars were coal carts pulled by ___.
3. The place where the first locomotive was made is ___.
4. *Puffing Billy* was an early ___.
5. The locomotive that first won people to the idea of riding on trains was the ___, which was built by ___.
6. In an hour the *Rocket* could travel ___ miles.
7. Riding on the earliest trains was very rough because ___.
8. The first steamboat to pay for itself was made by ___.
9. People called the *Clermont* ___.
10. The *Clermont* was first tried out on the ___.
11. The first ship to make use of steam in crossing the Atlantic Ocean was the ___.
12. The first ship to cross the Atlantic entirely by steam power was the ___.
13. The very first automobiles were run by ___.
14. These first automobiles were made in the countries of ___ and ___.
15. The first gasoline automobile was made in ___.
16. The first successful airplane flight was made by ___.
17. This flight took place at ___ in the year ___.
18. Orville Wright said, "Remember that there were three of us. Don't forget ___."

TRIPS TO MAKE

Museums sometimes have very old vehicles on exhibit. They often show collections of pictures of early ways of travel. Many public libraries also have such collections. Sometimes the bus, railroad, ship, or airplane companies have interesting exhibits.

Find out whether there are such exhibits in your community and plan trips to see them if there are. If it is not possible for the whole class to go, send committees to visit the exhibits and to report what they see.

If you know anyone who has been among a primitive people, invite him to tell you about their ways of transportation.

You may wish to see some of the latest ways of travel, also. A trip through a late model of a train, airplane, ship, or bus may give you some surprises. People who have charge of such ways of travel are often very kind about showing them to school groups. Be sure to ask the person in charge whether you may go. If he agrees, let him help you decide on the best time.

When you return to school, make a report of the things you learned and enjoyed. Talk over any questions that arise.

Be sure to write a letter of thanks to each person who made your trip possible.

SOME THINGS TO TALK OVER

Give facts to show why you think as you do about each of these questions.

1. Why is transportation important to a people's way of living?

2. What kinds of transportation are used in your community?

3. What are some of the changes that would take place in your life if all transportation should stop?

4. Has any change in ways of transportation ever speeded up the growth of your community?

5. How do roads affect transportation?

6. Ask some early settler how the roads in your community have changed during his lifetime. Report this to your class.

7. Why was the wheel such an important invention?

8. Which of man's early inventions are still useful today?

9. What do you think may be some of the next improvements in transportation?

SHARING WITH OTHERS

Plan a program in which you will share with others what you have learned about man's changing ways of travel.

Let one committee make pictures and tell stories about the wheeled vehicles used by primitive man. Another committee can make pictures and tell stories about the early kinds of boats and ships. Still other committees can make pictures and tell stories about railroads, steamships, automobiles, and airplanes.

Each committee should choose its own chairman, or leader, and there should be a chairman for the whole program.

When you are getting ready for your program, practice giving your stories and reports so that you can improve them. Have you learned to stand easily and quietly as you talk? Try to give your report clearly, so that those who are listening can understand and enjoy what you have to say.

Some poems and songs would make your program more interesting. The committee on airplanes may wish to have a short play about Wilbur and Orville Wright and their sister Katharine.

Some of the class may make models of early boats, trains, cars, or planes. Such models can be carved out of soap, made of modeling clay, or made from wood and other materials. If different people make models of different vehicles, the history of the changes in transportation can be shown with such models.

FUN WITH WORDS

After each word below are three meanings, numbered (1), (2), and (3). Only one of these meanings is correct. Write the words on a sheet of paper, one under the other. After each word write the number of its correct meaning.

transport: (1) a city on the sea, to which ships come and go; (2) any kind of game, such as football; (3) to carry people or things from place to place.

vehicle: (1) any means of carrying people or things from place to place; (2) a three-wheeled bicycle; (3) a ship that is driven through the water by many oars.

masts: (1) crowds of people; (2) the tall, upright poles on a boat, to which sails, ropes, and so forth are fastened; (3) a large pile, or collection, of any one thing.

harbors: (1) safe places, especially waters where ships are protected; (2) shelters made of poles and brush; (3) hard work.

ports: (1) goods brought from another country for sale; (2) goods sent to another country for sale; (3) cities built on harbors, where ships may load and unload their cargoes.

locomotive: (1) the reason why a person does something; (2) an engine that pulls cars on a railroad; (3) a fine automobile.

paddle wheel: (1) a wheel with paddles on it, used to move a boat through the water; (2) a wheel used to pack the dirt over which it runs; (3) the small wheel on the front of a tricycle.

screw propeller: (1) a tool for taking out screws; (2) a box in which screws are carried; (3) a sort of wheel with blades on it, used to drive a ship or airplane forward.

helicopter: (1) a flying machine or flying toy with whirling blades on top; (2) a police captain; (3) a kind of gun used in war.

glider: (1) an airplane with one motor; (2) an airplane that has no motor; (3) an airplane with four motors.

For thousands of years books have been one of the best means of communication. In the Middle Ages monks did the most to spread the use of books. Here is a monk making a handwritten book.

Sharing Information and Ideas

People from many parts of the world have helped to make the discoveries, inventions, and improvements used by civilized man. No one country could have the many improved ways of living in use today without learning from other peoples. Usually a great many men and women help to work out any single invention. A man in one part of the world makes a discovery. A person in some other place hears of it. He figures out a new way to use it or to improve on the uses already known.

People make slow progress when they are cut off from the rest of the world. They need to exchange ideas, as well as goods, with one another. So from the earliest days people have tried to find better ways of *communication,* or of exchanging information and ideas.

We do not have any records to show when and how men first talked together. We do know, however, that language grows all the time. As people learn more about the world in which we live, new words are needed. The more primitive a people is, the fewer words there are in its language. Why is this true?

The people of long ago wandered over the earth, and different groups settled in different places. So the new words they added to their language were not the same. In time many new and different words had been added to the language of each group. That meant that people from different parts of the world could not understand one another. Today there are many different languages spoken by the different peoples that live on our earth.

When travel was very slow and hard, there was not much need for people to know each other's languages. Now that airplanes and fast ships go to all parts of the world, people often need to understand another language.

Bettmann Archive

American Indians drawing picture records on a buffalo skin, showing what the tribe has done.

LEARNING TO WRITE

Even primitive man wanted to put down information and ideas where they could be seen and remembered for a while. In other words, he wanted to keep records. Perhaps a hunter had killed a bigger animal than any other member of his tribe had ever killed. He wanted people to see and remember what a large beast it was. So he drew its picture on the wall of his cave. Scientists have found many such picture records in the homes of primitive men of long ago.

Using symbols instead of pictures

But pictures needed a good deal of space, and it took a long time to carve them in rock. And besides, people often wanted to keep a record of things that were hard to draw.

So men began to use *symbols,* or signs, to stand for ideas. They tied knots in strings or cut notches on sticks. These knots or notches stood for certain facts they wished to remember. Today Rosita's father keeps a record of his llamas by tying a knot in a string for each animal. He calls this record string a *quipu* (kē′pō̄ō).

Such symbols as knots and notches meant nothing, however, except to the person who remembered what they stood for. People wanted symbols that would have meaning for anyone who saw them.

They began to make symbols that were more like pictures.

The change from picture writing to writing with symbols was very, very slow. At first the pictures were made with fewer lines than before. For instance, the picture of a man might be drawn without arms or legs. Thus the symbol for "man" would consist of a circle for the head and a single line for the body.

People within a group came to know what the symbols stood for. So it was possible for them to read one another's written messages. Different groups of people in different parts of the world worked out their own written symbols.

The advantages of using an alphabet

Writing with symbols was much faster than drawing whole pictures. It also took much less space. But it was still slow, hard work. Such writing was hard to read, too, because the meaning of so many different symbols must be learned.

Finally there came a time when a group of people thought of an easier way to write. An *alphabet* something like the one we use today was invented.

No one really knows which people first thought of using an alphabet. But there are good reasons for believing it was a people who long ago lived just east of Egypt. These people were copper miners. Many of them worked for the Egyptians and had to keep records of their work.

We think it was these miners who noticed that words were made of different sounds. They discovered that all their words were made by putting only thirty-two sounds together in different ways. So they made a symbol for each sound. Then any word could be written by using the right sound symbols, or letters, in the right order. It became far easier to read and write, because a person had to learn only thirty-two symbols instead of hundreds.

The first of these thirty-two symbols was made like the head of an ox. It stood for the first sound in the word for "ox," which was something like "alph." The second symbol stood for the first sound in the word for "house," which was something like "bet." Can you guess why the letters with which we write our words today are called the alphabet?

The use of sound symbols was a great step in helping people write down their thoughts for others to read. Many groups of people borrowed the alphabet and fitted it to their own language. Today the languages of most civilized men are written with alphabets.

Only a few peoples, such as the Chinese and Japanese, still use picture symbols that stand for words or ideas. About fifty thousand different symbols are used in writing the Chinese language. Do you wonder that many Chinese children never learn to read and write? And do you wonder that many Chinese would like a simpler written language?

Writing on tablets with sharp-pointed sticks

As men learned better ways of writing, they needed better things to write on than stones and cave walls.

An early invention was the *tablet,* a large, flat piece of wax or clay. Tablets

were easier to handle than stones. It was possible to write on a tablet with a *stylus* (stī'lŭs), or sharp-pointed stick. The writing was done while the wax or clay was soft. Wax tablets became hard as they cooled. Clay tablets were baked until they were dry and hard. It is from these tablets that we have learned much that we know today about the life of early man.

But tablets were large and heavy for the amount of writing on them. You can understand what an improvement it was when men began to use *paper*.

Early ways of making paper

The Chinese are believed to have been the first people to make paper. At first they made it from plant stems, which they pounded together into a flat sheet. Later they made it of white rags. But in those days the Chinese did not have much to do with other peoples. Little was known outside their own country about their use of paper.

It was the people of Egypt who gave the use of paper to the world. They made their paper from *papyrus* (pȧ pī'rŭs), a tall plant that grows in some parts of the Nile oasis. Papyrus has a solid stem.

The Egyptians cut the papyrus plants into short lengths. They split these pieces open and took out the *pith,* or soft inside part of the stem. This pith was cut into slices. The slices were placed side by side to form a flat sheet. Then a layer of pith was laid across the first layer. These double sheets of pith were soaked in water and pounded together until they formed one flat sheet. When this was dry, it made a sheet of brown paper.

Other peoples began to buy papyrus from Egypt and to make paper for themselves. A certain ruler of Egypt refused to sell any papyrus to an enemy country. So the king of that land asked his men to find a way of making paper from animal skins. And they did. The thin layers of sheepskin which they learned to prepare were called *parchment*. This parchment took ink well, and it was found to be better than papyrus paper in several ways. For one thing, it lasted much longer.

Parchment began to be widely used. Even today people sometimes use parchment for important papers which they wish to keep for a long time. The diplomas given when students finish college are often made of parchment. That is why we sometimes speak of diplomas as "sheepskins."

Part of an Egyptian papyrus scroll written over 2,000 years ago. The pictures tell a story.

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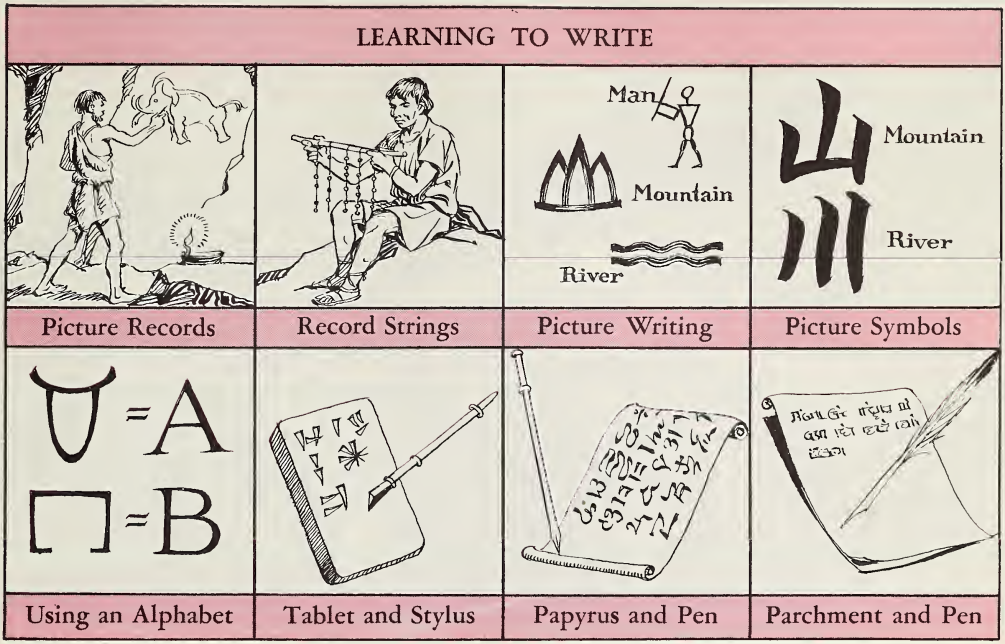


MAKING BOOKS

The first books were written on tablets of wax or clay. Although these were hard to handle, they were sometimes collected into libraries by kings and other men.

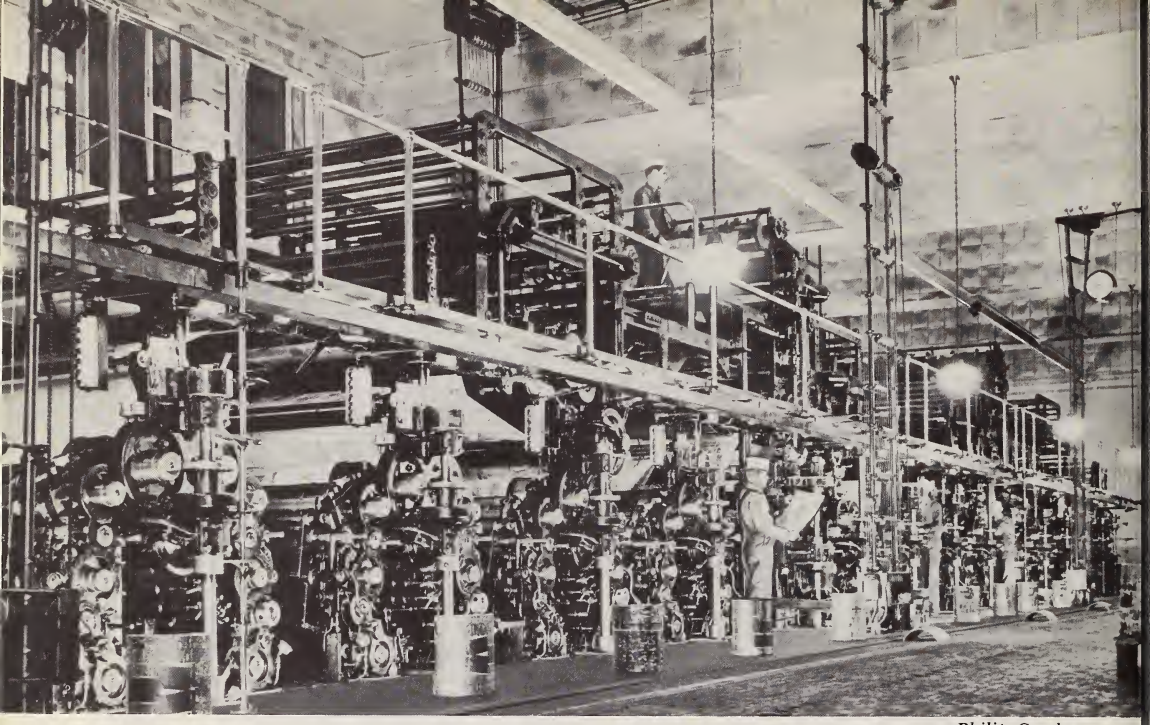
Making and collecting scrolls

After papyrus paper and parchment were invented, it became far easier to write books. Many sheets of paper or parchment were fastened together to make a strip long enough for a whole book. Each end of this long strip was fastened to a round stick. The paper was then rolled up on one of the sticks. As the reader unrolled the long strip of paper from one stick, he rolled it up on the other one. This kind of book was called a *scroll.* (See the chart on page 244.)

Many, many scrolls were made. It is said that one famous king collected five hundred thousand scrolls. All these scrolls had to be written by hand. The men who copied them were called *scribes.* Sometimes a hundred copies of a book would be made at one time. A man would read the book aloud while a hundred scribes wrote it on scrolls. For pens they used pointed feathers or reeds.

The growing use of books with pages

It was possible to write on only one side of papyrus paper, but both sides of parchment could be used. As parchment became more and more common, books with pages came to be used instead of scrolls. It was easier to read from them



Philip Gendreau

A huge modern printing press used for printing a newspaper. Notice the man on the second floor.

than from scrolls. This new kind of book became common not long after the time of Christ.

But for hundreds of years after pages were first used, books still had to be copied by hand. They were so valuable that not many people were able to own them. Most of the books were owned by rulers or by the church. Very few people could read or write.

The men who did the most to spread the use of books were the *monks,* who served the Christian church. Groups of monks lived together in places called *monasteries.* Many of these men spent nearly all their time in copying books. They did beautiful work. Often the pages of their books had hand-painted pictures and designs. The book they most often copied was the Bible. Monks also taught people to read and write. Civilized man owes a great deal to these Christians who made and cared for books and taught others to read.

Much of the knowledge that has led to the great inventions of today was preserved by those handwritten books.

Hand printing with wooden blocks

It was the Chinese who first had the idea of *printing.* They drew their symbols on wooden blocks. Then they cut away wood around the symbols so the symbols would be raised above the rest of the surface. Then they inked the symbols. When the blocks were pressed down on paper, the symbols were printed on it. Perhaps you have made block-printed designs in much the same way.

As in the case of paper making, China's knowledge of printing did not spread to other countries. It was many years before people in other parts of the world learned to print.

People in Europe finally thought of block printing, just as the Chinese had. They learned to carve a whole page of a book on one block and print a page at a time. This was faster than copying the book by hand. Once the block had been carved, a great number of copies could be made rather quickly. Still, a whole block had to be carved for each page.

The use of movable type

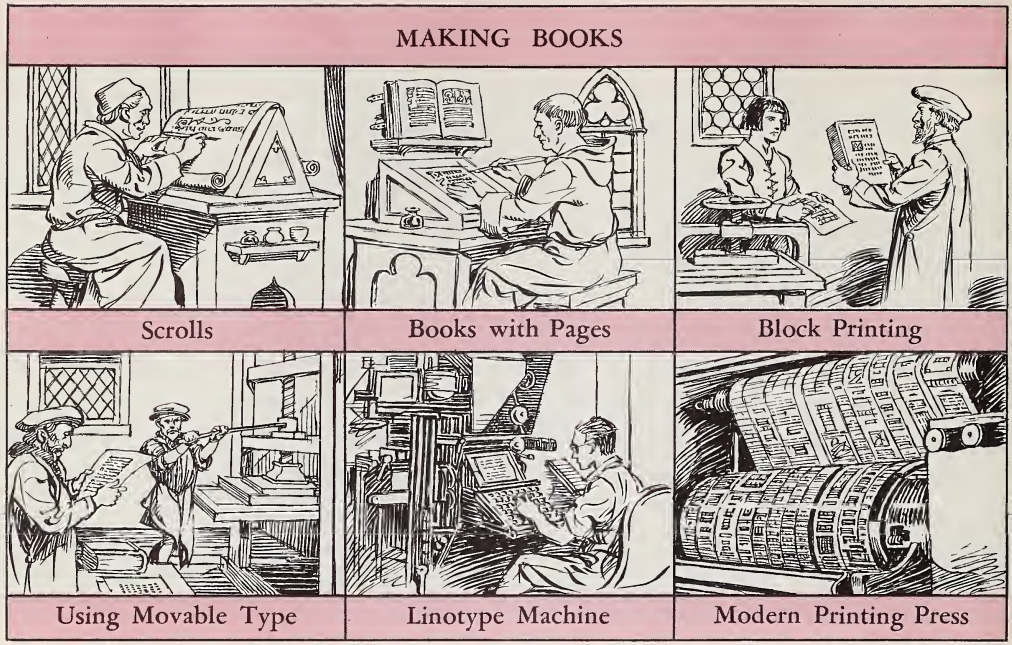
A man named John Gutenberg, who lived in Germany about five hundred years ago, had a better idea. He began using *movable type*. This means that he made blocks for the separate letters and used them over and over to form different words. In this way the same blocks could be used to print many different books. It was then that modern printing had its start.

Several other men began using movable type at about the same time. But most people think Gutenberg was the first in Europe to make use of it. The Chinese had tried printing with movable type. But they had so many different symbols that block printing was easier for them.

Gutenberg found a way to make the type from metal, and he built a machine called a *printing press*. Of course this first printing press had to be run by hand.

John Gutenberg looking at the first page printed by his printing press, which is on the left.

Bettmann Archive



Printing presses were later run with the foot, something like a sewing machine.

Learning to print faster and faster

More and more books were printed. The printing press turned them out much faster than the monks had been able to copy them. Yet people wanted more books than could be had. Men figured out ways to print faster still. Many improvements in the printing press were made.

It was in London, England, over a hundred years ago, that a newspaper was printed on a steam press. The newspaper was called "The Times." The new steam press printed four times as fast as a hand press. In an hour it could print over a thousand sheets on one side.

Still the type had to be set by hand. This means that someone had to form the words by putting each letter in place by hand. It was slow work.

The problem of setting type in a faster way was solved when the *Linotype* machine was invented. With this machine a man simply spells out the words by pressing the right keys. The metal type for a whole line of words is made by the Linotype machine.

As soon as one line of type is made, it falls into place inside the machine. Then another line can be formed. The whole page of metal type is made just as fast as a man can write on the keys. When type has been used to print a book or newspaper, it can be melted and used again.

Now typesetting machines and power presses turn out books, newspapers, and magazines faster than was thought possible a hundred years ago.

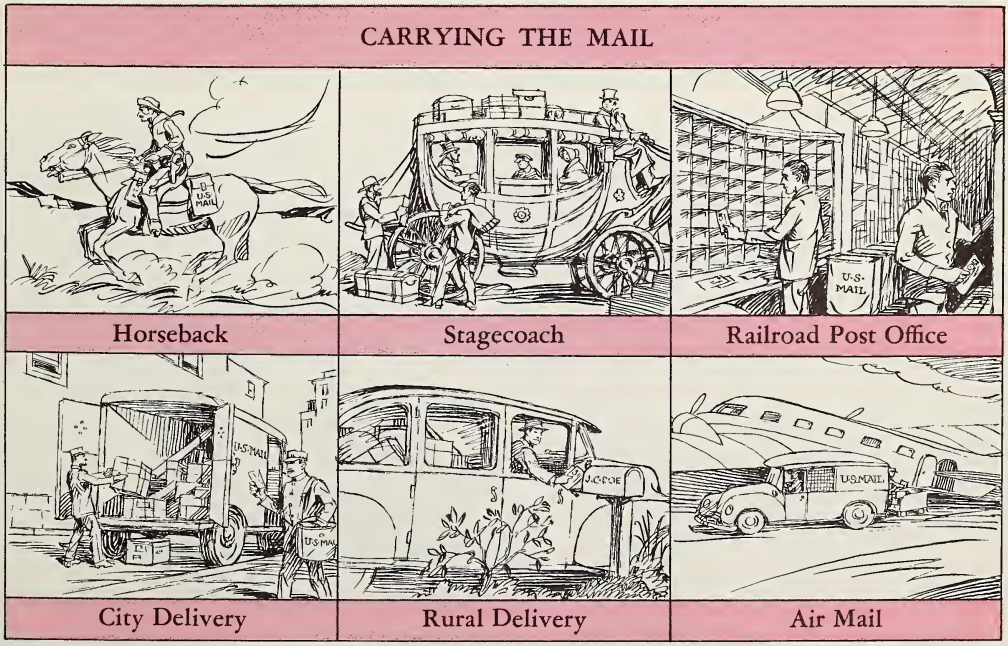
How to improve ways of speaking and writing has been one of man's great problems. But there has been another equally important problem: how to send messages to people in other places. Man had no sooner learned to *communicate* with those around him than he wanted to communicate with those farther away. What sort of message might he have sent?

One of the earliest means of sending messages across space was the *tom-tom,* a primitive kind of drum. Another means was the *fire signal.* One fire meant one thing, two fires meant another, and so on. Then someone thought of signaling with puffs of smoke by day and of waving lighted *torches* at night. A torch is a flaming light that can be held in the hand. (See the picture on page 248.)

Early man also sent messages by runners. To be a runner, a man had to be strong and quick. It was considered an honor to be chosen as a runner.

Carrying the mail in the early days and today

After people had learned to write, they often sent written messages by runners. Sometimes they needed to send a message farther than one man could run without getting too tired. So men would be stationed at different points along the way. One runner would carry the message to a stopping place and give it to another runner. This runner would carry the message to the next runner. Thus it would go from one runner to another until it had reached the end of its journey.



The same idea was used for sending messages by men mounted on animals. In the early days of our own country, letters were carried by men on horseback. One rider took the mail as far as a day's journey. Then he exchanged mailbags with another rider and returned to the place from which he had come. The point at which the mail was exchanged was called the "post." The men who carried the mail from post to post were called "postmen."

The invention of steamships, trains, trucks, and airplanes have each in turn speeded the sending of written messages. Today letters can go by air from one side of the globe to the other in half a week.

Developing a signal system

Although men kept improving the ways of sending mail, they dreamed of sending long-distance messages without carrying them. Messages could be sent across space with both the tom-tom and the fire signal. Surely there was some way to send messages across greater distances.

In the year 1784 two brothers named Claude (klōd) and Ignace Chappe (ēn-yȧs′ shȧp) were sent to a school in France. They both lived at the school, but they stayed in different buildings. Claude and Ignace wanted to talk to each other. So they figured out a way to signal to one another. On the roof of each building they put an upright pole with movable wooden arms.

They planned a *code,* or set of signals, that stood for the different letters of the alphabet. When the movable wooden arms were set in one position, they stood for a certain letter of the alphabet. When the arms were set in another position, they stood for another letter. In that way the brothers could spell out messages to each other across the tops of the

The *Great Eastern* laying the first Atlantic cable. This was the largest steamship at that time.

Bettmann Archive

Combine Photos

A large telephone switchboard in England. Twenty-eight women can handle calls at the same time.

houses. This was the first known use of a code for spelling out words.

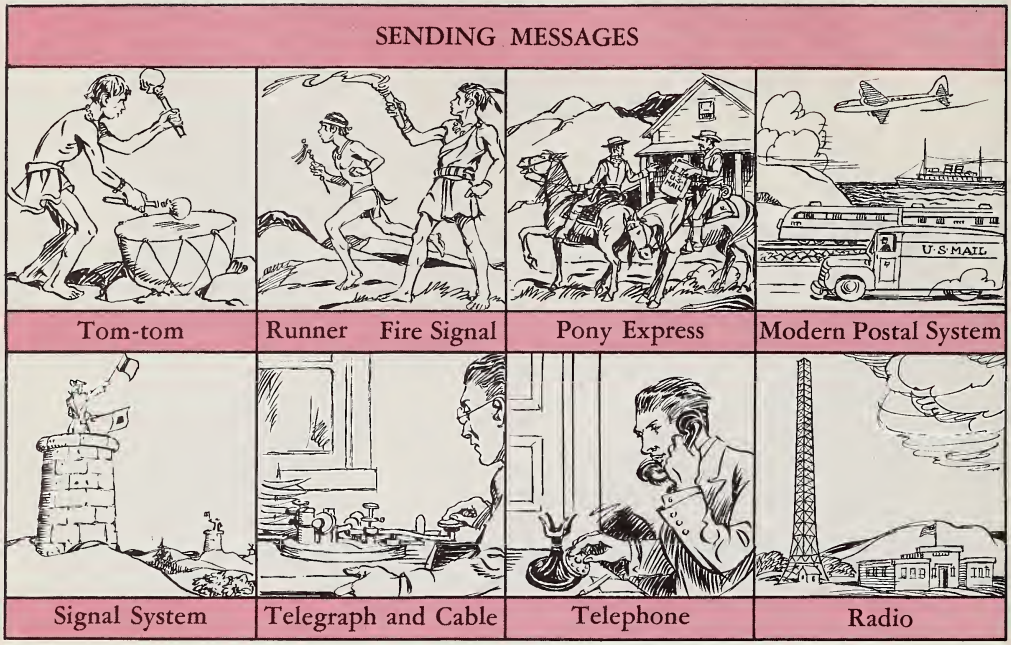
When Claude grew up and left school, he kept on improving this signal system. The French Government decided to make use of it. Tall signal towers were built on the tops of hills no farther apart than a person could see. A man in one tower would signal with flags to a man in another tower, spelling out words in code. In this way a message could be sent over great distances more quickly than the fastest horsemen could carry it.

The telegraph and the Atlantic cable

After men had begun to experiment with electricity an American artist found a way to send code messages by wire. This man was Samuel Morse. After working on his idea for several years, he invented a successful *telegraph*. When the electric current at one end of the wire was stopped and started again, an instrument at the other end made a clicking sound. Morse worked out a code of "dots and dashes," or long and short sounds, to stand for the alphabet. The *Morse code* is still used for sending telegrams.

The telegraph carried messages much faster than they had ever been carried before. Soon all civilized nations were putting up telegraph poles and wires and making use of this new invention.

People wished that they might send telegrams across the sea. But how could they ever put wires across the ocean? It was Cyrus W. Field, and the men working with him, who succeeded in laying a *cable* across the Atlantic Ocean. A cable



is a bundle of electric wires lying at the bottom of a body of water. These men had to try many times before the cable was laid all the way across. And when they did get the cable across, it broke within a month.

Cyrus W. Field showed the kind of character that men who do great things must have. He kept on trying. At last, in 1866, a cable was laid across the ocean again, and this time it did not break. Since then many other cables have been laid. Now messages travel constantly between the continents along cables that lie on the bottom of the earth's oceans. Such messages are called *cablegrams.*

Bell's invention of the telephone

It was another American, Alexander Graham Bell, who found a way to send the human voice over electric wires. Bell was a young teacher who taught deaf people to talk. He had made a study of the human ear.

A young man named Thomas Watson helped Bell with his experiments. The two of them had worked long and hard for many years. One day Watson heard the voice of Bell, who was in another part of the house. The voice said, "Mr. Watson, come here. I want you." Bell's voice had come over the *telephone!*

It was still many years before the telephone was a complete success. But the work of Bell gave us the beginning of the telephone systems on which we so depend.

The wireless telegraph and the wireless telephone

The telegraph, the cable, and the telephone were wonderful ways of sending

messages. But they all required wires. Putting these wires across great distances was a difficult and costly task.

A young Italian named Marconi discovered that it was possible to send messages through the air without wires. He invented the *wireless telegraph*. This was especially useful to ships at sea. Now messages could be sent from the middle of the ocean. Many a ship in trouble has been saved, or its passengers have been rescued, because of Marconi's invention.

But the greatest value of the wireless telegraph was that it led to that later invention—radio. People said, "If there can be a wireless telegraph, surely there can be a *wireless telephone*." Many men began working on the idea. And sure enough, it was not very long before the wireless telephone, or the *radio*, was in use.

Great radio stations were built to *broadcast*, or send out, radio messages all over the world. At first a person who listened to the radio had to have an earphone in order to hear. But soon someone invented the *loud-speaker*. The loud-speaker made the sound loud enough so that it could be heard all over the largest of rooms. Today there are more than fifty million radios in use in the civilized parts of our world.

These pictures show a radio broadcast and the board in the control room of a broadcasting studio.

Combine Photos *James Sawders—Combine*

General Electric Company

These young people are taking part in a television variety show. Notice the camera on the left.

SEEING ACROSS SPACE

While some men were inventing ways of sending sound across long distances, other ways of communication were being worked out at the same time.

The development of the motion picture

A *camera* for taking pictures had been invented. Someone took several pictures of the same person in slightly different positions. When these pictures were placed in a row and moved along very fast, the person seemed to be moving. In many parts of the world men began trying to make *motion pictures.* No one man succeeded in making the motion picture as we have it today. It was the work of many different men, as was true in the case of the radio and other inventions.

At first motion pictures were silent. The people in them usually talked, but their words could not be heard. Their more important speeches appeared on the screen as printed words. Soon men began looking for a way to make the people talk aloud in motion pictures.

How talking pictures were finally made to work

Thomas Edison had already invented a machine called the *phonograph.* It would make a record of any sound, such as the human voice, on a piece of wax. When a special kind of needle ran over this wax record, the recorded sound could be heard again. The record of a human voice sounded just like the voice of the person who had spoken.

The first talking pictures made use of the phonograph. But no one could discover a way to make the pictures and the voices go together. Finally a means was found of changing sound to light and taking pictures of it. Then the light had to be changed back to sound again when the picture was shown. And so the *sound motion picture* became really successful.

Today we can not only send people's voices across great distances by radio. We can also take sound pictures of people as they talk or sing and send the films all over the world.

Seeing people over the radio

After the sound picture had been invented, people wished they could see as well as hear over the radio. Scientists began to work on that idea. There is not room here to give the names of all the men who helped to work it out. But work it out they did!

The *television* set of today is a radio that allows people to see and hear those who are broadcasting. Scientists believe that television will soon be as common in the homes of civilized peoples as radios.

The kind of people who make great inventions

You have read about some of the high points in the story of man's progress in conquering time and space.

What will the next great invention be? That is yet to be seen. Men are working in many different fields, and new discoveries are being announced almost every day. There is no end to the things we may learn about this wonderful world of ours. Perhaps you yourself may someday make an even greater invention than any one of those about which you have read.

There is one thing, though, about which we can feel sure: The great inventions and discoveries of tomorrow will be made by those who are learning, while they are young, to stick to a job. They do not quit working just because the task grows hard or because others say it can't be done. They are learning that the harder the task is, the greater is the joy when it has been completed.

A family watching television at home. There are millions of television sets in our country today.

Charles Phelps Cushing

A GAME WITH SKITS

Skits are very short plays. They do not tell a whole story, as a play does. They show only one short scene of it, and they have only a few characters. Characters are the people taking part in a play.

Here is a skit made from a story you have read in this book.

Characters: Two Young Men

First Young Man (who is in bed): What are you reading?

Second Young Man (who sits beside the bed, reading a newspaper): I am reading about a man in Germany who was killed yesterday. He made a glider and was killed while trying to fly it. Do you suppose men will ever succeed in flying?

First Young Man: I don't know, but somehow I think they may.

Second Young Man: Do you remember the helicopter that Father brought us one time?

First Young Man: Oh, yes, I remember!

Second Young Man: Maybe you are right. I believe there is something to flying, after all.

First Young Man: Suppose you and I try to make a flying machine!

Second Young Man: Let's do it! I'll run down and get that bird book we used to read so much. It may give us some ideas.

Can you guess the names of the young men in the above skit?

It is fun to make up such skits. There are many interesting books about inventors. Such books often have parts that can be made into fine skits.

Divide your class into small committees. Let each committee make up a short skit about some subject mentioned in pages 221–251 of this book. Find out all you can about this subject before you start writing.

Each committee should prepare to give its own skit. After each skit has been given, the others are to guess what it is about.

Do not tell others in the class the subject you have chosen for your skit. It will not matter if two committees choose the same subject, because the skits will be different. You may wish to use one of the subjects listed below, or you may think of some other subject for your skit.

Alexander Graham Bell — Cyrus W. Field
Scribes Making a Scroll — Samuel Morse
Thomas Edison — Marconi
John Gutenberg — Robert Fulton
Egyptians Report the Making of Parchment to Their Ruler
Claude and Ignace Chappe
Making Paper from Papyrus
Working Out the First Alphabet
Printing a Modern Newspaper
Carrying Mail by Pony Express
Scene at Kitty Hawk in 1903
Primitive Men Sending Messages
The Race Between the Sirius and the Great Western
A Ride in an Early Automobile
Working with Steam-Driven Automobiles

IS THIS WORD YOURS?

Here is another game with words. Let each pupil cut thirty-six strips of paper about one inch wide and three inches long. On each of these paper cards, write a different word from the list on the next page.

When you are ready to play, choose one person to be the leader. The leader should call a word from one of his paper cards and name another pupil to give a sentence using that word correctly. If the pupil gives a correct sentence, he gets the card and a turn at being leader. If he misses, he must give one of his own word cards to the leader, who then calls on another pupil.

If the same word is called more than once, a new sentence must be given each time.

The person who has the most cards when the time is up wins the game.

The teacher should serve as time keeper and call "Time!" half a minute after a word is given. If the sentence is not given before time is called, the pupil misses and must pay a card. This keeps the game moving and gives more people a turn. You will need to think up a sentence for each word before the game begins, so you will be ready for your turn.

Here is the list of words for your game:

communication	alphabet	pith
wireless telegraph	telegraph	quipu
wireless telephone	parchment	stylus
loud-speaker	tom-tom	monk
Morse code	monastery	scribe
printing press	telephone	symbol
fire signal	broadcast	papyrus
movable type	printing	scroll
communicate	cablegram	camera
clay tablet	Linotype	torch
motion picture	phonograph	code
sound motion picture	television	cable

LEARNING FROM A CHART

Turn back to the chart on page 241. We would not be able to write today if the people of long ago had not kept improving their ways of writing.

On what do you think the man in the first picture is drawing his elephant? Why do you think he is drawing it? On what are the Indians on page 238 drawing their picture records? What might the record strings in the second picture of the chart stand for? Can you see how the picture symbols for a mountain and a river grew out of the picture writing for these words?

The symbols for A and B are the ones that the miners near Egypt used in their alphabet. Do they look anything like the head of an ox and a house? Some encyclopedias show the changes these letters went through before they became A and B. One pupil might like to put the different forms of these letters on the board for others to see.

How is a stylus different from a pen? What two kinds of pens are shown? What was the difference between papyrus and parchment? Which was more like our paper?

SOME THINGS TO TALK OVER

1. Compare the written language of the Chinese with the written languages of other civilized nations.

2. Do inventors usually work out all of the ideas they need, or do they usually build upon the ideas of others? Give facts to prove your answer.

3. Have all of the great inventors lived in the same country? Give facts to prove your answer.

4. Does the sharing of ideas between peoples of different countries cause more or fewer inventions to be made? Why do you think as you do about this?

5. What recent invention do you know of? What changes have been caused by it?

SHARING WHAT YOU HAVE LEARNED

A very interesting exhibit may be made, showing man's improvements in ways of communication. Indian picture records may be drawn on paper that has been cut to look like animal skins. A stylus may be made of wood, and tablets can be made of clay. Sheets of plain paper pasted end to end, with a stick fastened at each end, will serve as a scroll. Early ways of printing can be shown by carving the letters on blocks of wood. You may think of many other ideas.

If you make such an exhibit, put a neatly printed card under each thing, telling what it is. Invite others to see your exhibit. Be ready to tell your guests about the things that are shown.

Primitive and civilized ways of living often appear side by side. This airplane pilot is saying good-by to his Egyptian friend, whose wooden plow is being drawn by a camel and a water buffalo.

Learning to Live Together In Peace

This book has told how the natural resources of our earth help to make the different ways of living of its many peoples. You have seen how differences in climate and in communication cause people to live primitive lives or civilized lives. You have read part of the wonderful story of man's progress in gaining control over the forces of nature.

You have seen that early man was shut in by distances too great to be traveled on foot or by boat. Yet today airplanes circle the globe in less than a week. And ships, trucks, and trains carry the world's goods wherever and whenever they are needed.

The earliest men knew of no kind of power except that of their own strong bodies. Today the strength of human hands is multiplied beyond anything we can imagine. Today we have steam power, electric power, gasoline power, and even atomic power.

Once man could know the thoughts and feelings of only the people who lived close to him. And he had few ways of understanding even these. Today we can see and hear people who are in other parts of the world. By means of the printed page and sound pictures we can share the thoughts of men now dead. The different peoples all over the earth are beginning to understand each other and to stop wondering at their differences.

Yes, man has come a long way in learning to use the natural resources of the earth. In years to come, still greater inventions and discoveries will be made.

Yet for all his progress, man has not yet solved his greatest problem. Do you remember what that problem is? Read on and see if you are right.

THE SECRET OF HAPPINESS

There is one interesting and important fact that you may have noticed as you read this book: The inventions of civilized man have made him more comfortable, but they have not made him any happier. Nik and Ar-luk, in their primitive home, found as much joy in living as did Tom in his modern home. Why do you think this is true?

It is the way a person gets along with others that has most to do with his joy in living. And the rules for getting along well with others do not change.

Tom, who lived in a large city, found that he was not happy when he was unkind to others.

Bogana lived in a thick rain forest. But when his father said, "I am ashamed of my son," he was just as unhappy as you would be. No one wants to be a coward.

Nik and Ar-luk knew almost nothing of civilized ways. Yet they understood the importance of honesty better than many people in our own country do.

The greatest problem of our modern world

Men have been slow in learning how to live happily together. Not long ago our world had its most terrible war. Many civilized countries took part. Our country was in it too. Many of the earth's resources were used up in fighting. Large numbers of people were left without enough food or clothing. And thousands of children no longer had homes.

So we see that men have not yet learned to get along well with others. If they are to keep from having a worse war, they must learn to live together in peace.

This is the greatest problem that lies before the peoples of the world today. It is a problem which you may help to solve.

How we can help with this problem

If we wish to help solve this problem, we must learn to get along well with those right around us. How can we learn to live happily with others?

We must be worthy of people's trust. We have seen how those who cannot be trusted bring unhappiness to themselves and others. Jasim couldn't enjoy the shining flute because he had not been true to his sister's trust. And when Rosita failed to watch the flock as she had promised, she brought great unhappiness to herself and Tito. We must prove that people can depend on us in both little things and big things.

We must learn to be good sports. We must understand that the other fellow should have a turn. He wants to win part of the time.

Do you remember the story about Tom and Jack? Jack thought that he and his friends should always have the best of everything. Jack didn't make anybody very happy, not even his friend Tom. But Tom gave Hendrik a chance, even when he saw it would help Hendrik to win. Tom made a good friend. And you saw how that friendship brought joy both to the boys and to their families.

We will not always have such good luck as Tom did, just because we are fair to others. But we will be happier when we are good sports. And so will the people around us.

We must learn to be kind. Most of the problems of living together could be solved by simple kindness. The best way to help our world to be happy is just to

be kind to everyone. We must even be kind to those who have not yet learned to be kind to us.

Jasim was not fair to Esmat when he spent her money for himself. Many sisters would have been very angry with him. They would have tried to "get even" with him. But Esmat was sorry that her brother had brought such unhappiness on himself. She planned a way to buy him the shining flute that he had given up.

Although Esmat's plan was meant for Jasim's pleasure, it brought joy to others, too. Turn to page 128 and read the ending of that story again. How do you think Esmat's mother felt as she smiled on her young daughter? And how do you think Esmat felt when she heard her mother's words that day?

We must learn to appreciate others. We have seen that no man or woman, boy or girl lives by his own work alone. The more civilized our way of living becomes, the more we must depend on one another for everyday needs.

The work of many people lies between your breakfast cocoa and the brown-skinned boy who gathered the cacao seeds. The nuts in the candy you eat may have been gathered by a boy like Bogana. You may wear a coat made of the hair of camels such as Jasim tended. Every day you use a number of things that have come from the work of others, far and near.

Many people worked to make the book you are reading now, the clothes you wear, the movies you enjoy. Many people worked to make most of the things that give you comfort, education, or fun.

We must do our share in the work of the world. When we make a poor job of the work we do, we are being unfair to ourselves and to others. That is something Rosita learned.

Many people in different parts of the world are working to make this earth a better place to live in. When we do our very best at our own jobs, we help to make the world better. This is true, no matter how small our jobs may be. And we find that doing our best work makes us happier, too.

Now and then some one person plays a very special part in improving man's way of living. Magellan did this when he led the way across the wide seas. The Wright brothers did this when they invented the first successful airplane. Samuel Morse did this when he worked out a plan for sending messages by wire. And you have read of many others.

We have seen that these people knew what they wanted to do. And they gave their very best to the job.

A wise man once said, "A thing that is worth doing at all is worth doing well." This old saying is as true today as it ever was. The boys and girls who learn to do their best are the ones who grow up to do great things for our world.

You can make your life be of service in the world

Do you remember what it is that our world needs most? It is people who have learned to get along well with others. You can be such a person if you will. But you will have to be honest and true. You will have to do your share of the work. You will have to learn to appreciate others and to be always thoughtful and kind.

LIVES THAT COUNT

In this book you have read of a number of people whose lives have been very helpful to others. Many other men and women have lived such lives. It is not possible for one book to tell about all who have done fine things for the world.

Ask someone in your library to help you find a book about a person who lived a very useful life. She may give you a book about Clara Barton, or Eli Whitney, or George Washington Carver. Or it may be about any one of many, many others.

Read it and see why someone wanted to write a book about that man or woman. Give your class an interesting report on the story you read.

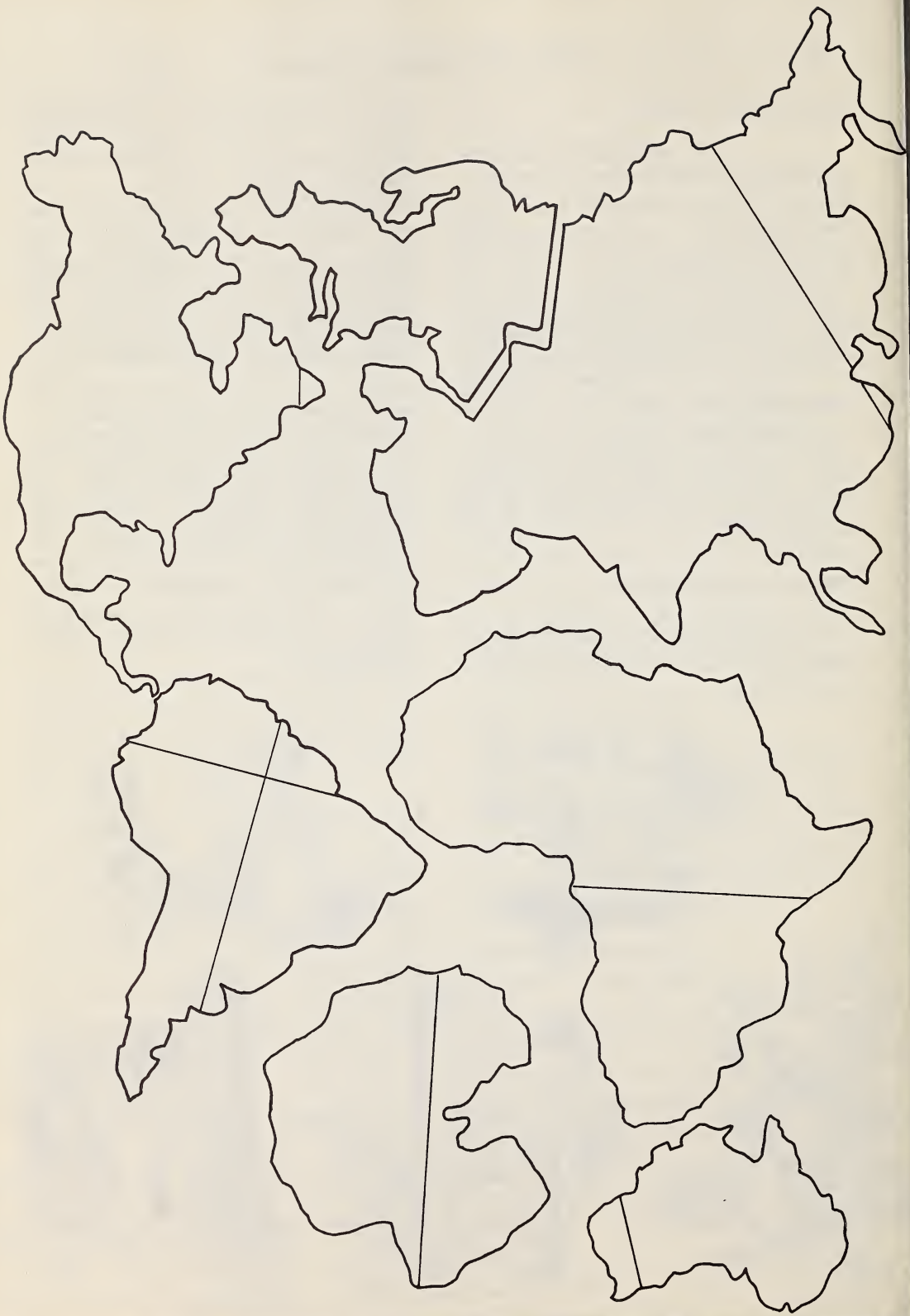
THE UNITED NATIONS

Many countries of the world have joined together to try to work out ways for all peoples to live together in peace. This group of countries is called the United Nations. Their purpose is to work together for the good of all nations.

The United Nations meets in New York City. Each of the member countries sends delegates. A delegate is a person who speaks and acts for a whole group of people. Each delegate to the United Nations speaks and votes for the people of his own country.

Our country is a member of the United Nations. Find out the names of the delegates who vote for us. Find out what some of the United Nations' problems are now.

In working together, these countries have some of the same difficulties that trouble boys and girls in their group work. Meeting such difficulties is man's greatest problem. We all hope that the work of the United Nations will help to solve this problem. Can you and your classmates also help to solve it by learning to work and play together in helpful, happy ways?



HOW TO MAKE YOUR OWN GLOBE

STEP 1: USING A BALLOON

1. Getting the balloon. Get a small, round, rubber balloon. Such a balloon usually costs only a few cents. Be sure it is round and not too large. It will not need to be blown up more than six inches through the middle. If you cannot get a balloon, or if your balloon bursts, you can make a ball with newspapers and string. (See the directions on page 264.) Your balloon is not likely to burst unless you blow it up much larger than you need to.

2. Blowing up your balloon. Measure a piece of string from eighteen and a half to nineteen inches long. Blow up the balloon until this piece of string will just go around the middle of it. If at first the ends will not meet, let out some of the air. If the ends lap over, put in more air. Keep working in this way until the string will just go around the balloon. Then twist the stem of the balloon and fasten it tightly near the end with a rubber band or string. No air should escape.

3. Hiding the stem. Now the stem of the balloon must be hidden, so that the globe will be perfectly round. To do this, place the balloon on your work table with the stem up. Take a strip of Scotch tape, about four inches long, in your right hand. With one finger of your left hand, push on the stem until it goes down into the balloon. While holding it down, place the Scotch tape tightly across the pushed-in stem. You will have to remove your finger quickly as you do this. Stick another piece of Scotch tape in the opposite direction. You are now ready to put the surface on your globe.

STEP 2: MAKING THE SURFACE

1. Tearing paper strips. You will need a piece of brown wrapping paper at least three feet long and three feet wide, or six feet long and a foot and a half wide. Do not use paper that is shiny on either side. Fairly heavy paper works best, but thin paper is all right if you use more of it. Even brown paper bags will do, if you have enough of them. Do not use any parts that have been stuck together.

Take your brown paper and tear off any edges that have been cut by machine or with scissors. Throw these strips away, as they will not work well. Only torn edges will fit together smoothly. Tear all of your paper into rough strips about six or eight inches long and not over an inch wide.

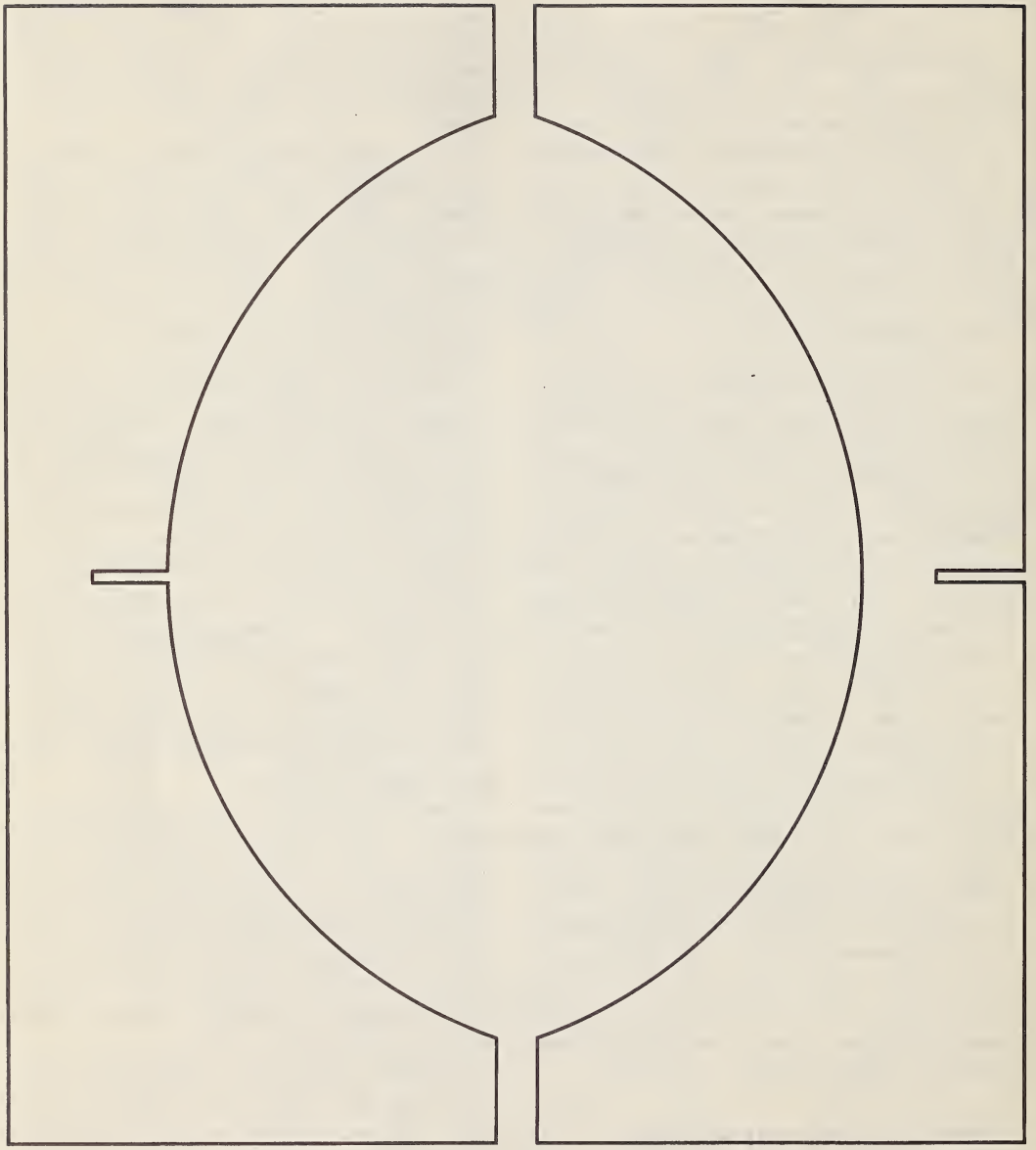
2. Pasting the strips on the globe. Have ready a bowl or pan in which there is about a cupful of homemade paste. Your teacher will find directions for making flour-and-water paste in the Teacher's Manual. Cover your desk or table with several thicknesses of newspaper, as the paste will drip.

Place your balloon on the table. Dip one of the strips of paper into the paste, wetting both sides of it. Squeeze out as much paste as you can. Open up the crumpled strip of paper and smooth it out. Then stick the strip of paper to the side of the balloon. Run your fingers over the strip so it will stick smoothly all over.

Now dip another strip into the paste, squeeze it, open it out, and stick it across the first one. Keep pasting these strips in different places on the balloon, turning them first in one direction, then in another. They should cross each other in every possible direction. Smooth each strip on the globe with your fingers. Every part of it must stick smoothly to the globe.

Continue pasting these strips until you have built up a thick crust all over the surface. Put on all your strips. If you use enough paper, your globe will hold its shape when dry, even if the air escapes.

3. Drying the globe. Put the wet globe aside to dry, setting it on a folded newspaper to protect the surface on which it rests. Let



it dry for two or three days, until all the dampness is out of it, before you start working on it again.

STEP 3: MAKING A STAND

While the globe is drying, you may make a stand for it. You will need a piece of heavy cardboard seven inches long and six inches wide, or two pieces seven inches long and three inches wide. Lay a thin sheet of paper over the stand pattern on page 262 and trace over it with a pencil. Cut out the two parts of the pattern, lay them on the cardboard, and trace around them. Then cut the cardboard along the traced lines.

Fit the two notches together to make the stand for your globe. The stand will last longer if you stick Scotch tape on each corner made by the two notches.

If you would rather buy a stand, you may do so at a hardware store or a ten-cent store. Ask for one of the little cups that go under the legs of furniture. A good, steady one will serve very well as a holder for your globe.

STEP 4: MAKING WATER AND LAND

1. Painting the water. When your globe is thoroughly dry, paint it light blue all over with poster paint. Of course you know that water does not cover the whole globe. But you can do a better job by painting the whole globe blue and then painting the continents over this blue coat. Let this coat dry before painting the continents.

2. Making patterns for the continents. Lay a thin sheet of paper over the continent outlines on page 260. Put something heavy on the edge of the paper to hold it in place. You should be able to see the outlines through the paper. Trace over them lightly with a pencil. Draw in the seven straight lines with a ruler. These are guide lines, to help you in placing the continents on your globe. The pattern for Europe is the only one that has no guide line. Carefully cut out each continent pattern from the sheet of paper. Do not cut on the guide lines.

3. Placing the continents on the globe. It is important that you get the continents in their right places on your globe. Use a classroom globe as a guide. Discuss the positions of the continents with your teacher and classmates. If you do not have a classroom globe, use the maps on pages 12–15 to see how to place the continents.

Put a rubber band or string around the middle of your globe and fasten it with two pieces of Scotch tape. This stands for the equator, which is a make-believe line around the middle of the earth's surface. You will read more about the equator on page 46. Draw the equator on your globe. Then fasten another rubber band or string around your globe in exactly the opposite direction. Your globe will then be divided into four equal parts. The rubber bands are your guides for placing the continents.

With tiny pieces of Scotch tape, or small thumb tacks or pins, fasten the continent patterns right over the rubber bands. The straight lines on the patterns should fall on the rubber bands. Keep looking at your classroom globe to see where each continent belongs. Do not worry if you cannot fit the patterns on perfectly. Flat patterns cannot be made to fit perfectly on a globe. Get them as nearly right as you can. Cut small slits wherever the edges stick out too much.

When you and your teacher feel sure that your continents are well placed, trace around the patterns with a sharp pencil. Complete each continent before you go on to the next. When you have finished drawing the seven continents, remove the patterns, rubber bands, and Scotch tape from your globe. See that you have not forgotten any continent or any part of one.

4. Painting the continents. With a small brush and green poster paint, fill in the outlines of the continents on your globe. Paint only the land. Leave the water blue.

If you make a mistake, put blue paint over the wrong part. Then paint the land correctly. Let each coat of paint get entirely dry before you put on another one.

STEP 5: LETTERING THE GLOBE

Make a list of the seven continents named on page 10 and the four oceans named on page 11. Print these names just as you wish to print them on the globe. Be sure that your lettering is good and your spelling is correct.

Print the names of the seven continents and four oceans on your globe. You can do a better job if you put several books under your arm so your hand will be higher. Use ink if possible. If you make a mistake in lettering, do not erase it. Paint over it and letter again after the paint is entirely dry.

Keep your globe in a safe place. You will need to use it often.

SECOND PLAN FOR STEP 1

Here is a plan for using newspapers instead of a balloon for the inside of a globe. This plan is to be followed only by those who do not have balloons. Globes made with newspapers are usually not as round and smooth as those made with balloons. But they will do very nicely if these directions are followed.

1. Making a paper ball. Take a whole sheet of newspaper and crumple it firmly between your hands until you have made it into a small, hard, round ball. Keep on pressing and turning it until it is as round and hard as you can make it.

Take another sheet of newspaper. Wrap one corner of it around the ball. Keep on folding and crumpling the paper around the ball until the whole sheet is tightly wrapped around it. Press the paper ball hard, turning it around and around.

Add four more sheets in the same way. The harder and rounder you make this ball, the better globe you will have. If your ball turns out to be soft and loose, take more newspapers and try again.

2. Tying the ball with string. Get a piece of string about five yards long. Tie it tightly around the paper ball, leaving the short end about six inches long. Do not cut the string.

Wind the long end of the string around the ball at least eight times, each time in a little different place. Tie the two ends together tightly each time. Keep squeezing the ball as you wind the string around it. Your ball will be divided into sections, like an orange, when you are finished. Cut off any string that is left over.

Your ball will probably be a little flat on the two sides where the string crossed. To make it rounder, tie it in the same way again, this time making the string go in the opposite direction. Keep pulling the string tight, so the ball will be hard and round.

3. Correcting errors in shape. If your ball is still flat on two sides, crush two small pieces of paper into little round pads. Place one of these paper pads on each flat side of the ball and press them into shape. Tie them firmly in place with string, in the same way that you tied the ball before. Of course, the size of the paper pads will depend on how flat the sides of the ball are.

If your ball is now soft and loose, instead of hard and round, start at the beginning and make another. It will not take long, and you can make a better one on the second try.

4. Getting the right size. Measure a piece of string nineteen inches long. It should just meet around the paper ball. If the ball is as much as an inch too small, add more paper and tie it as you did the first time. If it is as much as an inch too large, untie the string and take off some of the paper. Or you can try to press it into a harder, smaller ball and tie it again.

When you have a smooth, hard, round ball of the right size, you are ready for Step 2, page 261. Continue with Steps 3, 4, and 5.

Word List

This word list is a "little dictionary" containing the important words in this book. It includes all the words printed in *italics,* or slanting type, and the names of people and places which may be new to you. The pronunciation (unless it is very easy), the meaning, and the page on which the word first appears are given for each word. In most cases you will find only the meanings that the words have in this book. You can look in a large dictionary for the other meanings of these words.

Most of the words have been respelled to help you pronounce them correctly. The marks on the words below show how to pronounce the different letters.

ā as in māke	ē as in wē
â as in shâre	ĕ as in lĕt
ă as in hăt	ē̆ as in ovē̆r
å as in åsk	ī as in kīte
ä as in cär	ĭ as in tĭn
ȧ as in *ȧ*live	ō as in nō
ŏ as in tŏp	ū as in hūge
ô as in côrd	ŭ as in dŭst
o͞o as in to͞o	û as in fûr
o͝o as in co͝ok	th as in path
oi as in soil	~~th~~ as in ~~th~~ey
ou as in loud	zh as in measure

A

Africa (ăf′rĭ cȧ): the continent south of Europe, 10

airplane: a flying machine which is kept up by the force of the air against its wings, 44

airport: a landing field where airplanes may load and unload, 136

Alaska (ȧ lăs′kȧ): a large area in northwestern North America which is part of the United States, 102

Allah (ăl′ȧ): the Arab word for God, 111

alpaca (ăl păk′ȧ): a kind of llama with fine, long, woolly hair that is used for cloth, 153

alphabet (ăl′fȧ bĕt): the sound symbols of a language, arranged in their usual order, 239

Alps (ălps): a range of high mountains which runs through Switzerland, 174

altitude (ăl′tĭ tūd): height above sea level, 151

Amazon (ăm′ȧ zŏn): a river of South America, the largest in the world, 53

Andes (ăn′dēz): a range of high mountains which runs through Peru, 151

Antarctica (ănt ärk′tĭ kȧ): the ice-covered continent around the South Pole, 10

Antarctic Circle (ănt ärk′tĭk): the make-believe line on a map or globe which shows how far from the South Pole the midnight sun can be seen just one night a year, 104

Arab (ăr′ăb): belonging to a race of people who are spread over northern Africa and southwestern Asia, 109

Arabian (ȧ rā′bĭ ăn): having to do with the Arabs, 134

Arctic Circle (ärk′tĭk): the make-believe line on a map or globe which shows how far from the North Pole the midnight sun can be seen just one night a year, 94

Arctic Ocean: the ocean around the North Pole, 11

Ar-luk (är′lŭk): an Eskimo boy of King William Island, 77

artist (är′tĭst): a person who is skilled at painting, drawing, or some other art, 156

Asia (ā′zhȧ): the largest continent, east of Europe and Africa, 10

Atlantic Ocean (ăt lăn′tĭk): the ocean east of North and South America, 11

atom (ăt'ŭm): the very tiny parts of which everything in the world is made, 216

atomic power (ă tŏm'ĭk): power produced by the explosion of certain atoms, 216

Australia (ôs trāl'yȧ): the island continent southeast of Asia, 10

automobile (ô'tō mō bēl): a private vehicle that moves under its own power, a car, 227

ax: a sharp tool used for cutting down trees and chopping wood, 207

axis (ăk'sĭs): the make-believe line through the center of the earth, around which the earth turns, 45

B

Balboa (băl bō'ȧ): the explorer who discovered the Pacific Ocean in 1513, 36

bargain (bär'gĭn): to try to buy something at the lowest possible price, 121; a good or poor trade, 125

barley (bär'lĭ): a kind of grain, 113

bay: a part of the sea which extends into the land, usually smaller than a gulf, 11

bazaar (bȧ zär'): in northern Africa and western Asia, a group of shops in a town, 112

Bell, Alexander Graham: the American who invented the telephone, 248

blizzard (blĭz'ẽrd): a heavy, blinding snowstorm, 86

blowgun (blō'gŭn): a long, hollow stem through which an arrow or dart may be blown, 57

blubber (blŭb'ẽr): the fat of seals and other large sea animals, 81

Bogana (bō gä'nä): an Amazon Indian boy, 53

Brazil nuts (brȧ zĭl'): nuts that grow inside a big round shell, somewhat like the sections of an orange, 55

broadcast (brôd'kȧst): to send out a radio program, 249

burnoose (bûr nōōs'): the one-piece outer robe and hood worn by the Arabs, 113

Byrd, Richard E. (bûrd): an American explorer who has made four trips to Antarctica and has flown over both the North and South Poles, 104, 105

C

cable (kā'b'l): a bundle of electric wires lying at the bottom of a body of water and used for sending messages across the sea, 247

cablegram (kā'b'l grăm): a message sent by cable across the sea, 248

cacao (kȧ kä'ō): the beans, or seeds, from which cocoa and chocolate are made, 56

cache (kăsh): a hiding place, or that which is stored in a hiding place, 85; **caches** (kăsh'ĕz): more than one cache, 85

cactus (kăk'tŭs): a desert plant that has branches and often thorns, but no leaves, 109

camel (kăm'ĕl): a large animal used for carrying people and loads in the desert, 109

camel's hair: the hair of the camel, used for making a soft, silky, tan cloth, 113

camera (kăm'ẽr ȧ): an instrument for taking pictures, 250

caravan (kăr'ȧ văn): a group of desert travelers, together with their animals and goods, 114

cargo (kär'gō): the load of goods carried by a ship or airplane, 33

caribou (kăr'ĭ bōō): a kind of wild deer that lives in the northern part of North America, 78, 96

centavo (sĕn tä'vō): a coin worth less than a cent, 157

chalet (shă lā'): a Swiss cottage, 174

Chappe, Claude and Ignace (shȧp, klōd, ēn yȧs'): two brothers in France who invented a signal system later used by the French Government, 246

China: a large country in eastern Asia, 147

Chinese (chī nēz'): the people of China; having to do with China or its people, 239

chuño (chōōn'yō): frozen and dried potatoes, 156

churn (chûrn): to beat or shake cream to make butter, 115

civilized (sĭv'ĭ līzd): able to control nature in many ways and to use its gifts to make life both comfortable and interesting, 197

Clermont (klĕr'mŏnt): Fulton's steamboat,

which made its first trip up the Hudson in 1807, also called *Fulton's Folly*, 226

climate (klī′mĭt): the kind of weather a place usually has, 53

coal: a black mineral used as fuel, 210

Coast Guard: the branch of our navy which protects our coast line, 26

code (kōd): a system of signals used for communication, 246

Columbus, Christopher (kō lŭm′bŭs, krĭs′tō-fẽr): the man who discovered America in 1492, 35

communicate (kŏ mū′nĭ kāt): to exchange information and ideas, 245

communication (kŏ mū nĭ kā′shŭn): the exchanging of information and ideas, 237

Congo (kŏng′gō): a large river in central Africa, 72

conservation (kŏn sẽr vā′shŭn): saving or taking care of the things one has, 181

conserve (kŏn sûrv′): to save or take care of anything, 181

continent (kŏn′tĭ nĕnt): one of the seven large bodies of land on the earth's surface, 10

copper: a reddish-brown metal that is easily shaped, 99

Coppermine (kŏp′ẽr mīn): a river in the northern part of North America, 99

corral (kŏ răl′): a pen where animals are kept, 154

country: the land belonging to a nation, 19

couscous (kōōs′kōōs): an Arabian food consisting of a whole boiled sheep, barley, and vegetables, 119

crocodile (krŏk′ō dīl): a large, fierce water animal, 65

custom (kŭs′tŭm): a way of living among a certain group of people, 100

D

Da Gama, Vasco (~~th~~*à* gă′m*à*, vàsh′kōō): the man who first sailed around Africa to India, in 1497, 33

dart: a pointed stick used as a weapon, 57

date palm: the palm tree on which dates grow, 111

delta (dĕl′t*à*): land formed at the mouth of a river by soil brought down by the river, 144

desert (dĕz′ẽrt): a very dry place where few plants can grow, 109

Diesel (dē′zĕl): a very powerful kind of oil-burning engine that is cheaper to run than a gasoline engine, 215

direct rays: rays of sunlight coming from a point that is straight overhead, 46

downstream: with the current, 64

drag: a sort of sled that is used for pulling loads over bare ground, 207

dry season: the season in many parts of the world when it rains less than at other times of the year (in the Amazon, from July to December), 64

dugout (dŭg′out): a canoe made by hollowing out a log, 55, 207

dune (dūn): a hill of sand, piled up by the wind, 110

Dutch: having to do with the Netherlands or its people, 186

dye (dī): any coloring matter used for coloring cloth, 111

E

earth (ûrth): the sphere on which we live, 5; soil, 141

Edison, Thomas (ĕd′ĭ sŭn): the American inventor (considered the greatest inventor in history) who invented the electric light bulb, the phonograph, the motion-picture machine, the electric railway, and hundreds of other things, 212

Egypt (ē′jĭpt): the country of northeastern Africa which includes the lower part of the Nile, 141

Egyptian (ē jĭp′shŭn): having to do with Egypt or its people, 145

electric current: a flow of electricity, 212

electricity (ē lĕk trĭs′ĭ tĭ): the kind of power which, up to the present time, has caused the greatest amount of change in man's way of living, 178

electric motor: a machine that uses electricity to make something else move, 212

equator (ē kwā′tĕr): a make-believe line around the middle of the earth, where the noontime sun is always hot, 46

ermine (ûr′mĭn): a small animal of the Far North whose winter fur is pure white except for the black tip of its tail, 82

Eskimo (ĕs′kĭ mō): a member of the race of people who live along the cold northern coasts of North America, 77

Esmat (ĕz′mät): an Arab girl of the Sahara, 109

Europe (ū′rŭp): the continent north of Africa, 10

experiment (ĕks pĕr′ĭ mĕnt): a test made for the purpose of discovering new facts or proving facts already known, 187

explode (ĕks plōd′): to catch fire or burst or fly apart with sudden force and with much noise, 215

explore (ĕks plōr′): to search through a place in order to find out about it, 41

explorer (ĕks plōr′ĕr): a traveler who is looking for new information, 34

explosion (ĕks plō′zhŭn): the exploding of something, 215

F

fair: a gathering of people at a special time to buy and sell goods and to judge the best animals or other things, 152

Faraday, Michael (făr′*ȧ* dā, mī′k'l): the English scientist who discovered more about electricity than any other man, 212

fertile (fûr′t'l): rich in plant food, 143

Field, Cyrus W. (sī′rŭs): the American who had the first successful cable laid across the ocean, 247

fiesta (fyĕs′tä): holiday, 159

fire signal (sīg′năl): a way of communicating by the use of fire or smoke, 245

flagship: the ship that carries the commander of a group of ships and flies his flag, 37

flute (flo͞ot): a musical instrument that is a hollow tube, open at one or both ends, 112

foreigner (fŏr′ĭn ĕr): a person who belongs to another country, 156

foundation (foun dā′shŭn): a group of people which has been formed to use a fund of money for some good purpose, 189

franc (frăngk): a French bill that is now worth much less than a cent, 121

France: a country of western Europe, 176

Franklin, Benjamin: a great American who lived two hundred years ago, 212

fuel (fū′ĕl): material that will produce heat or power when it is burned, 153

Fulton, Robert (fo͝ol′tŭn): the American who built the first steamboat which made a profit for its owner, 226

Fulton's Folly (fo͝ol′ĭ): Robert Fulton's Hudson steamboat, the *Clermont,* 226

G

galley (găl′ĭ): a boat rowed by a number of men working together, each one using an oar, 207

gasoline (găs′ō lēn): a fuel made from petroleum and used for running airplanes, automobiles, and other machines, 215

gasoline engine: a machine that uses gasoline to make something else move, 215

gazelle (g*ȧ* zĕl′): a small, swift, graceful animal much like a deer, 139

geography (jē ŏg′r*ȧ* fĭ): the study of our earth and its people, 105

Germany (jûr′m*ȧ* nĭ): a country of central Europe, 176

glacier (glā′shĕr): a slowly moving sheet of ice, 176

glider (glīd′ĕr): an airplane that has no engine, 230

globe (glōb): a small model of the earth, 5; a round, flat map, made to look like one side of a globe, 56

goatskin: the skin of the goat, used by the Arabs for making bags and pails, 110

Gobi (gō′bē): a desert in eastern Asia, 137

Great Western: an early steamship, which made its first trip across the Atlantic in 1838, 226

Greenland: a very large island which is northeast of North America and which is mostly north of the Arctic Circle, 94

gringo (grĭng'gō): a word often used in South America to mean a person from another country, especially the United States, 156

gulf: a part of the sea which extends into the land, usually larger than a bay, 11

Gutenberg, John (gōō'tĕn bĕrk): the German who, about five hundred years ago, made one of the most important inventions in history, that of printing from movable type, 243

H

hammock (hăm'ŭk): a swinging bed, hung by cords at each end, 54

harbor (här'bĕr): a protected part of a body of water, where ships may safely stay, 224

harpoon (här pōōn'): a spear having a point that extends backward and catches in an animal's flesh, 90

health department: that branch of a government which helps people stay well, 23

helicopter (hĕl'ĭ kŏp tĕr): a real or toy flying machine which has a propeller on top but no propeller in front and no wings, which can fly forward and backward, straight up and straight down, and which can even hang in the air without moving, 229

hemisphere (hĕm'ĭ sfēr): half of a sphere or globe, 5

Hendrik (hĕn'drĭk): a boy from the Netherlands, 186

highlands: mountains, hills, or plateaus, 170

history (hĭs'tō rĭ): the story of peoples and countries up to the present time, 105

Hudson (hŭd's'n): the river in New York State on which New York City is located, 226

husky (hŭs'kĭ): Eskimo dog, 78

I

igloo (ĭg'lōō): an Eskimo house, often made of snow blocks, 80

improvement (ĭm prōōv'mĕnt): a new and better way of doing something, 198

India (ĭn'dĭ *ȧ*): a country of south Asia, 31

Indian Ocean: the ocean south of Asia, 11

invent (ĭn vĕnt'): to make something for the first time, 185

invention (ĭn vĕn'shŭn): something which has been made for the first time, 185

Ireland (īr'lănd): the island west of England, 153

Irish potato (ī'rĭsh): the white potato, 153

irrigate (ĭr'ĭ gāt): to water farmland so it will grow better crops, 132

island (ī'lănd): a body of land that is surrounded by water, 10

Italian (ĭ tăl'yăn): one of the people of Italy; having to do with Italy or its people, 249

Italy (ĭt'*ȧ* lĭ): a country of southern Europe, 176

J

jaguar (jăg'wär): a large, fierce, catlike animal which is brownish yellow with black spots, 59

Japanese (jăp *ȧ* nēz'): the people of Japan; having to do with Japan or its people, 239

Jasim (jā'sĭm): an Arab boy of the Sahara, 109

Jinga (jĭng'g*ȧ*): a boy of the Congo, 72

jungle (jŭng'g'l): a forest with a thick undergrowth of bushes, vines, and trees, 71

K

kerosene (kĕr'ō sēn): a thin oil usually made from petroleum and used for burning in lamps, stoves, and so forth, 81, 215

King William Island: a small island just north of North America, 77, 80

Kitty Hawk: a village on the coast of North Carolina, where the Wright brothers flew their first airplane, 44, 231

Koran (kō răn'): the Arabs' book of holy writings, 134

L

laboratory (lăb'r*ȧ* tōr ĭ): a place where experiments are carried on, 188

Lapland (lăp'lănd): a region in northern Europe, north of the Arctic Circle, 101

Lapp (lăp): one of the people of Lapland, 101

latex (lā'tĕks): the white liquid which comes from the rubber tree and from which rubber is made, 69

lead dog (lĕd): the dog that leads a team of huskies and finds the way for the team, 79

Linotype (līn'ō tīp): a typesetting machine which makes a whole line of type at once, 244

Little America: the place on the ice close to Antarctica where Byrd and his men camped, 105

llama (lä'mȧ): an animal related to the camel but smaller and without a hump, the beast of burden of the Andes, 152

locomotive (lō kō mō'tĭv): an engine used for pulling cars on a railroad, 225

loud-speaker: a radio receiver which makes the sounds loud enough to be heard some distance away, 249

lowlands: plains or valleys, 157

M

machete (mä chā'tā): a long, heavy knife used in South America for cutting small trees and clearing a path through the jungle, 54

Magellan, Ferdinand (mȧ jĕl'ăn, fûr'dĭnănd): the man who proved that the earth is round by sailing across the Atlantic and Pacific Oceans, 30

Magellan, Strait of: the strait at the southern end of South America, 38

mahogany (mȧ hŏg'ȧ nĭ): a valuable hardwood tree used for fine furniture, 69

Manilak (măn'ĭ lăk): Nik's and Ar-luk's big Eskimo dog, 78

manioc (măn'ĭ ŏk): a plant with large roots from which flour can be made, 54

Manuel (män wĕl'): a Peru Indian boy, 151

Marconi (mär kō'nē): the Italian who invented the wireless telegraph more than fifty years ago, 249

marker: a long piece of bone used by an Eskimo to show when a seal is rising in his hole, 91

market place: an open square in a town, where goods are sold out of doors, 164

mast (măst): an upright pole on a boat, to which sails, ropes, and so forth are fastened, 223

Mediterranean Sea (mĕd ĭ tĕ rā'nē ăn): the large sea between Europe, Africa, and Asia, 31

midday (mĭd'dā): noontime, 140

midnight sun: the summer sun shining at midnight at or near the North Pole or South Pole, 93

mill: a tool, machine, or other device for grinding grain, sawing wood, pumping water, and so forth, 207

minerals (mĭn'ĕr ȧlz): natural materials which are neither plants nor animals, such as rocks, iron, and water, 175

missionary (mĭsh'ŭn ĕr ĭ): a person who goes to live in a different country or place in order to teach the people about God, 100

moisture (mois'tūr): dampness, 129

Molalo (mō lä'lō): a girl of the Congo, 72

monastery (mŏn'ăs tĕr ĭ): the home of a group of monks, 242

Mongol (mŏng'gŏl): a member of one of the tribes of people living near the Gobi, 138

monk (mŭngk): a member of a religious community of men who live in a monastery, 242

Morse, Samuel (môrs): the American who invented the telegraph, 247

Morse code: a system of dots, dashes, and spaces that stand for the letters and numbers, invented by Samuel Morse and still used in sending telegrams, 247

motion picture: a series of pictures thrown on a screen so fast that the people and things seem to move as in real life, 250

mouth: the place at the end of a river where it flows into the sea or some other body of water, 99

movable type (mo͞ov'ȧ b'l): little blocks that each contain one letter or other symbol and that may be used over and over for printing various things, 243

mutiny (mū'tĭ nĭ): an attempt on the part of a group of sailors to take over the command of a ship at sea, 38

N

natural resources (rē sōrs′ĕz): the useful things that nature furnishes, 175

Nefta (nĕf′tȧ): an oasis town of northern Africa, 112

neighborhood (nā′bĕr ho͝od): a small section of a community, 187

Netherlands (nĕ͟th′ĕr lăndz): a small country of western Europe, 147, 189

Nik (nīk): an Eskimo girl of King William Island, 77

Nile (nīl): a long river in eastern Africa, one of the longest in the world, 142

nomad (nō′măd): a member of a race or group of families that has no fixed home but wanders from place to place, 109

North America: the continent of which the United States is a part, 10

North Carolina (kăr ō lī′nȧ): a state on the eastern coast of the United States, 44

North Pole: the northern end of the earth's axis, 45

note: a piece of paper money, or a bill, 122

nutmeg (nŭt′mĕg): a spice made by grinding the seed of the nutmeg tree, 30

O

oasis (ō ā′sĭs): a green spot in the desert, where water may be obtained, 114; **oases** (ō ā′sēz): more than one oasis, 133

ocean (ō′shăn): one of the four largest bodies of water on the earth's surface, 10

ore (ôr): material which has been dug from the earth because it contains a valuable metal, 158

P

Pacific Ocean (pȧ sĭf′ĭk): the ocean west of North and South America, the largest of the four oceans, 11

paddle (păd′l): a pole with a wide, flat end, used for making a canoe move through the water, 207; to move a canoe through the water with a paddle, 64

paddle wheel: a wheel with paddles on it that go around and drive a boat, 226

palaver (pȧ lăv′ĕr): a group conversation on important matters, 54

palm (päm): a kind of tree that grows in warm climates and has a crown of large leaves at the top, 56

paper: a thin material made from wood, rags, or plant stems and used for printing, writing, wrapping, and so forth, 240

papyrus (pȧ pī′rŭs): the tall, grasslike plant from which the Egyptians used to make paper, 240

parch (pärch): to roast, 62

parchment (pärch′mĕnt): the skin of an animal, prepared so that it can be written on, 240

parrot (păr′ŭt): a bright-colored bird with a strong, curved bill, 59

peccary (pĕk′ȧ rĭ): a wild animal that looks something like a pig, 57

pepper: a spice with a sharp taste, made from a berry that grows in some warm countries, 30

pepper pot: the main food of the Amazon Indians—a pot of stew, seasoned with pepper and kept boiling day and night, 62

Peru (pĕ ro͞o′): a country on the Pacific coast of South America, 151

petroleum (pĕ trō′lē ŭm): oil which comes from under the ground and from which we get gasoline, kerosene, fuel oil, and so forth, 214

phonograph (fō′nō grȧf): a machine which makes it possible to record sounds and then to hear them again when the record is played, 250

pith (pĭth): the soft inside part of some plant stems, such as papyrus, 240

plain: a large stretch of almost flat land, 173

plateau (plă tō′): almost level land that is high up in the mountains, 174

plow: a tool for breaking up the soil and turning it over before planting, 207

poles: the ends of the earth's axis, 45

poncho (pŏn′chō): a small blanket with a slit in the middle for the head, used in parts of South America as a man's overcoat, 155

population (pŏp ū lā′shŭn): the number of people who live in a place, 174

port (pōrt): a city built on a harbor, where ships can load and unload their cargoes, 224

Portugal (pōr′tū gȧl): a small country of southwestern Europe, next to Spain, 30

pottery (pŏt′ĕr ĭ): dishes, vases, and other things made of clay and then hardened by heat, 121

power (pou′ĕr): force which is used to do work, 205

primitive (prĭm′ĭ tĭv): like the earliest people of the earth; unable to control nature very much, 196

printing: making a number of copies of a piece of reading matter or a picture, from the same type or design, 242

printing press: a machine for printing, 243

Puffing Billy: an early locomotive, 225

Q

quipu (kē′pōō): a record string or strings in which a knot is tied for each animal and so forth, 238

R

radio (rā′dĭ ō): a system of sending voices and other sounds through the air without wires, 249

raft (rȧft): a number of logs or boards fastened together and used for floating loads on water, 207

railroad: a road that has rails forming a track for cars, 224

rain forest: a forest of very tall trees and no undergrowth, found only in hot, wet climates, 71

rainy season: the season in many parts of the world when it rains more than at other times of the year (in the Amazon, from January to June), 64

range (rānj): a chain of mountain peaks, 154

Red Sea: the long, narrow sea between Africa and Asia, 33

reed (rēd): a kind of grass that has a long, hollow stem, 123

reindeer (rān′dēr): a kind of deer, used in the Far North to draw sleds, 101

Rocket (rŏk′ĕt): an early locomotive, built by George Stephenson, 225

Rosita (rō zē′tä): a Peru Indian girl, 151

rubber: a very useful material made from the juice of the rubber tree and used for tires, overshoes, balloons, erasers, and so forth, 69

S

Sahara (sȧ hä′rȧ): a great desert in northern Africa, the largest in the world, 109

sailboat: a boat which is driven by the force of the wind against its sail or sails, 210

sandal (săn′d'l): a shoe which has only a sole strapped to the foot, 130

sandstorm: a storm in which the wind drives clouds of sand along a desert, 121

Savannah (sȧ văn′ȧ): the first steamship to cross the Atlantic, 226

scarce (skârs): hard to buy or to find, 31

scientist (sī′ĕn tĭst): a person who is trying to find out new facts about our world, 186

Scotland (skŏt′lănd): the area that lies north of England, 211

screw propeller (prō pĕl′ĕr): that part of a ship or airplane which has two to four blades that drive the ship or plane forward by their action on the water or air, 226

scribe (skrīb): a person whose work it was to copy books by hand, 241

scroll (skrōl): a book made on a long strip of paper or parchment, which was unrolled from one stick and rolled onto another as it was read, 241

seal (sēl): a large sea animal that is hunted by the Eskimo for its meat, oil, and fur, 81

sea level: the level of the surface of the ocean when it is still, from which we measure the height of land, 151

sealskin: the soft, furry skin of the seal, 81

seaport (sē′pōrt): a city or town on the sea, at which ships may load and unload their cargoes, 32

señor (sā nyôr′): the Spanish word for "Mr." or "sir," 160

sheik (shēk): the chief of an Arab tribe, 113
Shutts (sho͝ots): the name of a family from the Netherlands, 188
silversmith (sĭl′vẽr smĭth): a person whose work it is to make articles of silver, 121
sinew (sĭn′ū): a strong cord taken from the body of an animal, 84
Sirius (sĭr′ĭ ŭs): an early steamship, which made its first trip across the Atlantic in 1838, 226
slanting rays: rays of sunlight coming from a point that is not straight overhead, 46
sloth (slōth): a slow-moving animal that lives in trees, 57
soapstone: a soft kind of stone that feels something like soap, 81
sound motion picture: a motion picture in which all the sounds can be heard, 251
source (sōrs): the beginning of a river or of something else, 142
South America: the continent south of North America, 10
South Pole: the southern end of the earth's axis, 45
Spain (spān): a country of southwestern Europe, 34
Spanish (spăn′ĭsh): having to do with Spain, its people, or its language, 160
spearhead: the sharp point at the end of a spear or harpoon, 91
sphere (sfēr): anything that is round like a ball, 5
spice (spīs): material taken from certain plants and used to season food, 30
Spice Islands: a group of small islands southeast of Asia on which spice is grown, 35
spindle (spĭn′d'l): a smooth stick, somewhat pointed at each end, which is whirled around by hand to spin wool, and so forth, into thread, and on which the thread is then wound, 157
state: one of the forty-eight parts which together form the United States, 19, 23
steamboat: any boat that is run by the power of steam, 211
steam engine: an engine that is driven by steam, 211
Stephenson, George (stē′vĕn sŭn): the English inventor whose locomotive, the *Rocket*, won people over to train travel, 225
strait (strāt): a narrow strip of water that connects two larger bodies of water, 38
stylus (stī′lŭs): a sharp-pointed stick for writing on something soft, 240
surface (sûr′fĭs): the outside of anything, 10
Swiss (swĭs): the people of Switzerland; having to do with Switzerland or its people, 174
Switzerland (swĭt′zẽr lănd): a small country in central Europe, 167
symbol (sĭm′b'l): a sign that stands for an idea or a sound, 238

T

tablet (tăb′lĕt): a flat, thin piece of material used for writing or drawing, 239
telegraph (tĕl′ĕ grȧf): a system of instruments and wires for sending code messages by electric current, 247
telephone (tĕl′ĕ fōn): an instrument for sending and receiving the human voice and other sounds over electric wires, 248
television (tĕl′ĕ vĭzh ŭn): a radio that allows people to see as well as hear those who are broadcasting, 251
temperature (tĕm′pẽr ȧ tūr): the degree of hotness or coldness of the air or of anything else, 43
tent: a movable shelter made of cloth or skin and poles, 110
terrace (tĕr′ĭs): a patch of nearly level soil held up by a wall, 153
thatched (thăcht): covered with straw or leaves, 68, 154
Tito (tē′tō): a Peru Indian boy, the brother of Rosita, 151
tola (tō′lä): a kind of bush that grows above the tree line in the Andes and is used for fuel, 152
Tomaso (tō mä′sō): Tito's silver-white llama, 152
tom-tom (tŏm′tŏm): a primitive drum used for signaling, 245

torch (tôrch): a flaming light that can be held or carried in the hand, 245

trader (trād′ẽr): a person who trades, 31

trading post: a store in a thinly settled region, where a trader exchanges articles with the people who live there, 81

trail (trāl): a track or path, 79

transport (trăns pōrt′): to carry goods or people from place to place, 221

transportation (trăns pōr tā′shŭn): the carrying of goods or people from place to place, 221

tree line: the line along a high mountain, above which no trees can grow, 152

tribe (trīb): a group of families headed by a chief, 113

tributary (trĭb′ū tĕr ĭ): one of the streams which run together to form a river, 142

Trinidad (trĭn′ĭ dăd): Magellan's flagship, 37

Tropic of Cancer (trŏp′ĭk, kăn′sẽr): the make-believe line on a map or globe which shows how far north of the equator the midday sun is directly overhead just one day each year, 140

Tropic of Capricorn (kăp′rĭ kôrn): the make-believe line on a map or globe which shows how far south of the equator the midday sun is directly overhead just one day each year, 140

Tserin (tsûr′ēn): a nomad boy of the Gobi, 138

U

upstream: against the current of a stream, 65

V

vapor (vā′pẽr): dampness in the air, 43

vehicles (vē′ĭ k'lz): things for carrying people or goods from place to place, 223

Venice (vĕn′ĭs): in Magellan's time, a small country in northeastern Italy; now a large and beautiful city which is a part of the country of Italy, 30

Victoria (vĭk tō′rĭ *ȧ*): the only one of Magellan's ships to complete the trip around the world, 41

voyage (voi′ĭj): a long journey across the water, 30

W

Wana (wä′nä): an Indian girl of the Amazon, 53

water buffalo (bŭf′*ȧ* lō): a kind of ox that is used for working in wet fields, 146

waterfall: a stream of water falling straight down or nearly so, 176

water wheel: a wheel which uses the force of running or falling water to do work, 213

Watson, Thomas (wŏt′sŭn): the man who helped Bell with his telephone experiments, 248

Watt, James (wŏt): the Scot who invented the steam engine upon which modern steam engines are based, 211

Weather Bureau (bū′rō): the group of people in our government who keep records of the weather and give out weather reports, 231

wheel: anything which is round and flat and which can turn around an axis in the center, 222

windmill: a mill that is driven by the wind and is used to pump water or to do some other kind of work, 210

wireless telegraph: a system of sending code messages through the air without wires, 249

wireless telephone: a radio, 249

wolverine (wo͝ol vẽr ēn′): a long, black, furry animal that eats meat, 88

Wright, Katharine (rīt, kăth′*ȧ* rĭn): the sister of Wilbur and Orville Wright, who helped them to build their glider and airplane, 230

Wright, Wilbur and Orville (wĭl′bẽr, ôr′vĭl): the American brothers who, in 1903, made the first successful airplane flight, 44, 229

Y

yurt (yo͝ort): a movable house with a wooden frame covered with wool cloth, used by the Gobi nomads, 138

Index

This index shows on what pages you will find the various subjects in this book. The letter *m* before a page number stands for map, and the letter *p* stands for picture.